社会開発協力部報告書

No. 3

フィリピン工科大学
総合技術訓練センター
計画打合チーム報告書

昭和57年11月

国際協力事業団
社会開発協力部

フィリピン工科大学
総合技術訓練センター
計画打合チーム報告書

昭和57年11月

国際協力事業団
社会開発協力部

はしがき

フィリピン工科大学（TUP）は、職業訓練校的なPCAT（Philippine College of Arts & Trades）を、昭和５３年の大統領令で大学に昇格させ、高度な技術教育の推進並びに地方の職業訓練学校の指導を統一的に行うこととなった。

これを踏まえ、フィリピン政府は同大学内に総合技術訓練センターの設置を計画し、昭和５３年８月、わが国に対し設立協力につき要請越した。

わが国は、この要請に応じ、無償資金協力で建物と機械を供与し、昭和５７年５月、この総合技術訓練センターの開所式が行われた。

一方、技術協力関連では、事前調査の後、昭和５７年３月プロジェクトの討議議事録（R/D）の締結の為、実施協議チームが派遣されたが、合意の署名に至らなかった経緯がある。

今回、計画打合チームは、わが国の国内支援関係者と協力内容を練り直した。協力実施案を持参し、討議議事録を締結するべく派遣されたものである。

その結果、同チーム団長東京工業大学内藤喜之氏とフィリピン側代表ＴＵＰ学長DR. JOSE VERGARA氏との間で１１月３日、同討議議事録は署名され、ＴＵＰ総合技術訓練センタープロジェクトが実施されることとなった。

本報告書は、同チームの現地における討議議事録に係る接衝経緯、合意内容および協力計画をまとめたものである。

最後に、本プロジェクトに対する技術協力が実現することを至上の喜びとするとともに、内藤団長はじめ団員諸氏のご協力ならびに外務省、文部省、各高等専門学校、日本大学、東京工業大学、在比日本国大使館および内外の関係各機関の方々に対して謝意を表するとともに、本書が今後の協力実施に資すれば幸いである。

昭和５７年１１月

国際協力事業団

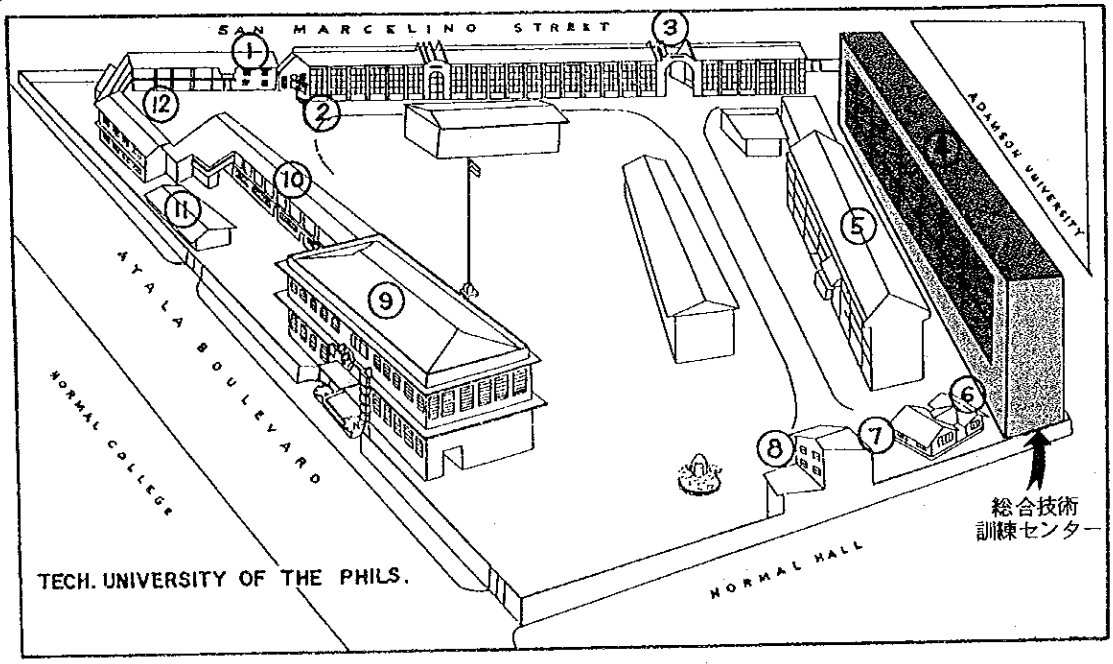
理事　中澤弐仁

目　　次

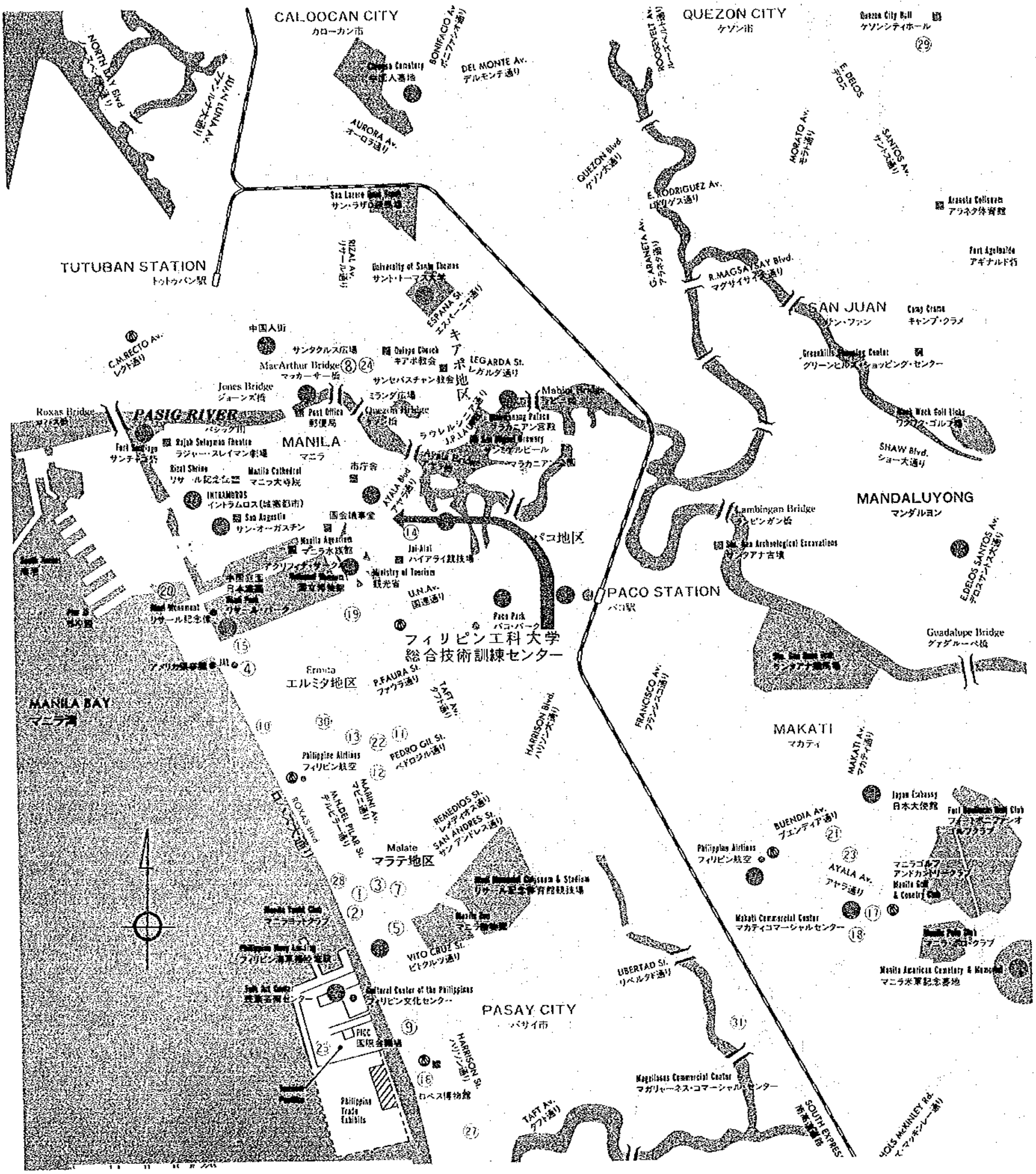
R／D署名場面：中央二人：左は内藤団長、右はVERGARA学長
後列左からひとりおいて高塩団員、前田団員、三浦
マニラ事務所長、川口団員、関口団員、DATU副学
長、ROXAS所長、ALFONSO副所長

LEGEND

①ADMINISTRATION
②ENGINEERING DEPT.
③TECHNICAL EDU. DEPT.
④INTEG. RESEARCA TRNG. CTR.
⑤PRACTICAL ARTS CENTER
⑥BAKERS SCHOOL
⑦ALUMNI CENTER
⑧CMT
⑨TEACHER EDU. DEPT.
⑩HIGH SCHOOL DEPT.
⑪STUDENT CENTER
⑫ARCH. & F. ARTS. DEPT.



フィリピン工科大学建物配置図


CALOOCAN CITY
カローカン市
QUEZON CITY
ケゾン市
TUTUBAN STATION
トゥトゥバン駅
BONIFACIO Av.
DEL MONTE Av.
デルモンテ通り
AURORA Av.
オーロラ通り
NORTH BAY Blvd.
JUAN LUNA Av.
QUEZON Blvd.
ケソン大通り
ROOSEVELT Av.
E. RODRIGUEZ Av.
G. ARANETA Av.
R.MAGSAYSAY Blvd.
マグサイサイ通り
MORATO Av.
モラト通り
E. DELOS
SANTOS Av.
Quezon City Hall
ケソンシティホール
Araneta Coliseum
アラネタ体育館
Fort Aguinaldo
アギナルド砦
RIZAL Av.
リサール通り
University of Santo Thomas
サント・トーマス大学
ESPANA St.
SAN JUAN
Camp Crame
キャンプ・クラメ
中国人街
C.M.RECTO Av.
レクト通り
サンタクルス広場
Quiapo Church
キアポ教会
MacArthur Bridge
マッカーサー橋
サンセバスチャン教会
LEGARDA St.
レガルダ通り
Jones Bridge
ジョーンズ橋
ミランダ広場
Mabini Bridge
Greenhills Shopping Center
グリーンヒルズショッピング・センター
Roxas Bridge
PASIG RIVER
パシッグ川
Post Office
郵便局
Quezon Bridge
Malacanang Palace
マラカニアン宮殿
San Miguel Brewery
Wack Wack Golf Links
ワクワク・ゴルフ場
SHAW Blvd.
ショー大通り
Fort Santiago
サンチャゴ砦
Rajah Sulayman Theatre
ラジャー・スレイマン劇場
MANILA
マニラ
Rizal Shrine
Manila Cathedral
マニラ大寺院
市庁舎
AYALA Blvd.
INTRAMUROS
イントラムロス(城塞都市)
San Agustin
サン・オーガスチン
国会議事堂
パコ地区
Lambingan Bridge
MANDALUYONG
マンダルヨン
Manila Aquarium
マニラ水族館
Jai-Alai
ハイアライ競技場
Sta. Ana Archeological Excavations
サンタアナ古墳
Ministry of Tourism
観光省
PACO STATION
パコ駅
Rizal Monument
リサール記念碑
U.N.Av.
国連通り
E.DELOS SANTOS Av.
Paco Park
パコ・パーク
フィリピン工科大学
総合技術訓練センター
Guadalupe Bridge
グァダルーペ橋
Ermita
エルミタ地区
P.FAURA St.
ファウラ通り
TAFT Av.
タフト通り
MANILA BAY
マニラ湾
FRANCISCO Av.
HARRISON Blvd.
MAKATI
マカティ
Philippine Airlines
フィリピン航空
PEDRO GIL St.
ペドロジル通り
MAKATI Av.
マカティ通り
Japan Embassy
日本大使館
ROXAS Blvd.
M.H.DEL PILAR St.
MABINI Av.
REMEDIOS St.
SAN ANDRES St.
BUENDIA Av.
ブエンディア通り
Malate
マラテ地区
Rizal Memorial Coliseum & Stadium
AYALA Av.
アヤラ通り
マニラゴルフ
アンドカントリークラブ
Manila Golf & Country Club
Manila Yacht Club
マニラヨットクラブ
Makati Commercial Center
マカティコマーシャルセンター
VITO CRUZ St.
ビトクルツ通り
Manila Polo Club
Manila American Cemetery & Memorial
マニラ米軍記念墓地
Cultural Center of the Philippines
フィリピン文化センター
LIBERTAD St.
リベルタド通り
PASAY CITY
パサイ市
FICC
国際会議場
HARRISON St.
Magallanes Commercial Center
マガリャーネス・コマーシャルセンター
Philippine Trade Exhibits
SOUTH EXPRES
ロペス博物館
TAFT Av.
タフト通り

I　序　　論

I－1　フィリピン工科大学総合技術訓練センター計画打合チーム派遣の経緯および目的

昭和５７年３月に派遣された内藤東工大教授を団長とする実施協議チームが、比側との合意が成立しなかった為、Ｒ／Ｄの署名が出来ず帰国した。この経緯を踏まえ、文部省、高専等、国内各関係者で協力計画を練り直し、工業高専を中心にチーフアドバイザーを含む計４名の長期専門家の派遣が可能となり、Ｒ／Ｄ案も比側の要求を満たす内容になったため、１０月２６日から１１月４日まで、内藤団長他４名から構成される今回の計画打合せチームが派遣され比側と協議の結果、ほぼＲ／Ｄ原案の通りに、TUP　Vergara学長と内藤団長との間で１１月３日、Ｒ／Ｄが署名され、同プロジェクトが５年間に渡り実施されることとなった。

協議途中、若干の修正が比側より要求されたため、外務省に請訓依頼をし、了解されたため、基本計画の表の訓練期間が日本側案の１年間から６ケ月に修正され、Joint Steering Committee のメンバーに、比側の経済企画庁とも云えるNEDAの代表を参加させる項目が加えられた。

比側カウンターパートと団員（各専門分野担当）との間で、同センターに無償で供与された機材を中心に訓練カリキュラムの作成が行なわれ、協力分野の機械、電気電子、土木学科のカリキュラム骨子が作成され、ミニッツとして、署名はしなかったものの今回の計画打合チームの協議成果品として比側代表TUP Vergara学長に手渡された。

先方との協議は主として、総合技術訓練センター所長のMRS. ROXASを中心に行なわれ、Ｒ／Ｄ署名の後、CORPUZ文部大臣に表敬し、団長より同プロジェクトに対する協力依頼がなされた。併せて、NEDAをも訪問し、協議結果を報告した。

Ｒ／Ｄで協力が行なわれる機械、電気電子、土木学科、及びチーフアドバイザーとして、合計４名の長期専門家が派遣される他必要に応じて、短期専門家が派遣されることになっている。

センターの目的としては、当面、比工大で学ぶ３年次、５年次の優秀な学生を各学科３０名程度選考しブラッシュアップを目的としてセンターの所有する機械を中心に訓練を行ない、併せて、外部からのトレーナーに対しても同様の訓練を実施しようとするものである。これらは、カウンターパートの責任で業務を行なうが、日本人専門家は、カウンターパートに対して上記訓練が実施可能となるよう助言と助力を与え協力するものである。

I－2　団員名簿

氏　　名	分　　担	現　　職
内藤喜之	総括及び電気電子部門	東京工業大学工学部教授
前田康穂	機械部門	群馬工業高等専門学校講師
川口昌宏	土木部門	日本大学理工学部教授
高塩至	大学運営	文部省学術国際局ユネスコ国際部企画連絡課係長
関口洋史	業務調整	JICA社会開発協力部海外センター課職員

I－3　調査日程

日順	月　日	曜日	行　　程	調　査　内　容
1	10／26	火	PR431にてマニラ着 JICA、日本大使館	 大使館及びJICA事務所にて協議日程につき打合せ
2	27	水	TUP	VERGARA学長に表敬及び協議 協力隊員との打合せ
3	28	木	TUP	IRTC機材の再確認及びTUP側との打合せ
4	29	金	JICA、日本大使館 TUP	請訓依頼 TUP側との打合せ
5	30	土	団内打合せ	カリキュラム作成作業及びR／D案文タイプ仕上げ確認等
6	31	日	資料整理	
7	11／1	月	資料整理	
8	2	火	TUPにて最終打合せ National Hydraulic Research Center University of the Philippines工学部 同大学内交通訓練センター 日本大使館及びJICA事務所	カリキュラム案提出 見学 協議途中経過報告
9	3	水	TUP Ministry of Education & Culture NEDA	R／D署名 CORPUZ教育文化大臣表敬、協議結果報告 同プロジェクトに対する協力依頼
	4	木	PR432にて帰国	

Ⅱ　討議議事録

Ⅱ－1　討議議事録（英文オリジナル）

THE RECORD OF DISCUSSIONS BETWEEN THE JAPANESE MUTUAL CONSULTATION TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES ON THE JAPANESE TECHNICAL COOPERATION FOR THE INTEGRATED RESEARCH AND TRAINING CENTER PROJECT

The Japanese Mutual Consultation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Dr. Yoshiyuki Naito, Professor, Faculty of Engineering, Tokyo Institute of Technology, visited the Republic of the Philippines from Oct. 26 to Nov. 4, 1982 for the purpose of working out the details of the technical cooperation program concerning the Integrated Research and Training Center (hereinafter referred to as "IRTC") Project in the Republic of the Philippines.

During its stay in the Republic of the Philippines, the Team exchanged views and had a series of discussions with the Philippine authorities concerned in respect of desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, the Team and the Philippine authorities concerned agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Manila, November 3, 1982

Y. Naito

Yoshiyuki Naito
Leader, the Japanese
Mutual Consultation
Team, Japan International
Cooperation Agency, Japan

Jose R. Vergara
President, Technological
University of the Philippines,
The Republic of the Philippines

ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Republic of the Philippines will cooperate with each other in implementing the Integrated Research and Training Center Project (hereinafter referred to as "the Project") for the purpose of promoting and strengthening education and related training in the field of technology through the expansion and improvement of the educational training system, and thus contributing to the industrial development in the Republic of the Philippines.

2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Japanese experts referred to in 1. above and their families will be granted in the Republic of the Philippines the privileges, exemptions and benefits no less favourable than those accorded to experts of third countries working in the Republic of the Philippines under the Colombo Plan Technical Cooperation Scheme.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The major portion of the Equipment has been already provided under the grant aid scheme of the Government of Japan and as supplement a small portion of the Equipment will be provided through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Equipment referred to in 1. above will become the property of the Government of the Republic of the Philippines upon being delivered c.i.f. to the Philippine authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

IV. TRAINING OF PHILIPPINE PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive at its own expense the Philippine personnel connected with the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

2. The Government of the Republic of the Philippines will take necessary measures to ensure that the knowledge and experience acquired by the Philippine personnel from technical training in Japan will be utilized effectively for the implementation of the Project.

V. SERVICES FOR PHILIPPINE COUNTERPART PERSONNEL AND ADMINISTRATIVE PERSONNEL

1. In accordance with the laws and regulations in force in the Republic of the Philippines, the Government of the Republic of the Philippines will take necessary measures to secure at its own expense necessary services for Philippine counterpart personnel and administrative personnel as listed in Annex IV.

2. As to the Philippine counterpart personnel, the Government of the Republic of the Philippines will endeavor to allocate the necessary number of suitably qualified personnel corresponding to each Japanese expert to be dispatched by the Government of Japan as specified in Annex II for effective and successful transfer of technology under the Project.

VI. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

1. In accordance with the laws and regulations in force in the Philippines, the Government of the Republic of the Philippines will take necessary measures to provide at its own expense:

(1) Land, building and facilities as listed in Annex V;

(2) Supply of replacement of machinery, equipment, instrument, vehicles, tools, spareparts and any other materials necessary for the implementation of the Project other than those provided through JICA under III above;

(3) Transportation facilities and travel allowance for the Japanese experts for the official travel within the Republic of the Philippines;

(4) Suitably furnished accommodations for the Japanese experts and their families.

2. In accordance with the laws and regulations in force in the Republic of the Philippines, the Government of the Republic of the Philippines will take necessary measures to meet:

(1) Expenses necessary for the transportation within the Republic of the Philippines of the Equipment referred to in III. above as well as for the installation, operation and maintenance thereof;

(2) Custom duties, internal taxes and any other charges, which may be imposed in the Republic of the Philippines on the Equipment referred to in III. above;

(3) All running expenses necessary for the implementation of the Project.

VII. ADMINISTRATION OF THE PROJECT

1. The President of the TUP will bear the overall responsibility for the implementation of the Project.

2. The executive Director of IRTC, as the head of the Project, will be responsible for the administrative and managerial matters of the implementation of the Project.

3. The Japanese Chief Advisor will provide necessary recommendation and advice on technical and administrative matters concerning to the implementation of the Project to the Executive Director of IRTC and, if deemed necessary, to the President of TUP or any other persons in close consultation with the Executive Director of IRTC.

4. The Japanese experts will give technical guidance and advice to the Philippine counterpart personnel concerning the following matters:

(1) Training programme and training curriculum in each course.

(2) Installation, operation and maintenance of the Equipment provided by the Japanese Government.

5. For the effective and successful implementation of the Project, the Joint Steering Committee will be established with the functions and composition as referred to in Annex VI.

VIII. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of the Philippines will be responsible for dealing with claims which may be brought by third parties against the Japanese experts, and will hold them harmless in respect of claims or liabilities arising in the course of, or otherwise connected with the discharge of their duties in the implementation of the Project, except when such claims or liabilities arise from the gross negligence or willful misconduct of the above-mentioned individuals. Should any question arise in connection with the foregoing, the two Governments shall immediately consult with each other.

IX. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

X. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from November 3, 1982.

However, there will be a general review by the Joint Steering Committee on the progress of the implementation of the Project during the third year of the cooperation period in order to assess whether the term of cooperation should be modified for the successful implementation of the Project.

ANNEX I	MASTER PLAN
ANNEX II	JAPANESE EXPERTS
ANNEX III	LIST OF ARTICLES
ANNEX IV	LIST OF PHILIPPINE STAFF
ANNEX V	LIST OF LAND, BUILDINGS AND FACILITIES
ANNEX VI	THE JOINT STEERING COMMITTEE

ANNEX I

MASTER PLAN

1. Objectives of the Project

The Integrated Research and Training Center (hereinafter referred to as "IRTC") will be the open institution for the training of senior undergraduates majored in fields of technology and engineering as well as mainly upgrading trainors and other personnel engaged in teaching and related training in the fields of technology and engineering education at universities and other institutions.

2. Objectives of the Programme

(1) To provide and conduct basic training courses as part of curricula for their education of senior undergraduates majored in the field of technology (hereinafter referred to as "Undergraduate's Basic Training");

(2) To provide and conduct advanced training courses as part of curricula for their education of engineering undergraduates majored in the field of engineering (hereinafter referred to as "Undergraduate's Advanced Training");

(3) To provide and conduct upgrading training courses mainly for trainors and other personnel of the Technological University of the Philippines and other colleges and institutions, engaged in teaching and related training in the fields of technology and engineering education (hereinafter referred to as "Trainor's Upgrading Training");

(4) To design, develop and produce curricula, other training software and control system for programme conducted by IRTC.

3. Framework of the Training System

Framework of the training system in IRTC to be covered by the technical cooperation by the Government of Japan will be as follows:

Type of Training	Entry of Qualification	Capacity	Duration
1. Undergraduate's Basic Training	Senior Undergraduates specialized in each field of technology of TUP and its equivalent.	90	
a. Mechanical Technology		30	Six months
b. Electrical and Electronic Technology		30	Six months
c. Construction and Civil Technology		30	Six months
2. Undergraduate's Advanced Training	Undergraduates specialized in each field of engineering of TUP and its equivalent	90	
a. Mechanical Engineering		30	Six months
b. Electrical and Electronic Engineering		30	Six months
c. Construction and Civil Engineering		30	Six months
3. Trainor's Upgrading Training	Trainor and its equivalent engaged in teaching and related training in each field of technology or engineering at universities and other institutions.	60	
a. Mechanical Technology and Engineering		20	Three months
b. Electrical and Electronic Technology and Engineering		20	Three months
c. Construction and Civil Technology and Engineering		20	Three months

ANNEX II

JAPANESE EXPERTS

1. Chief Adviser

2. Experts in the field of:

   (1) Mechanical engineering
   (2) Electrical and Electronic engineering
   (3) Construction and Civil engineering

3. Short-term experts may be dispatched, when necessity arises, for the smooth implementation of the Project.

ANNEX III

LIST OF ARTICLES

1. While limited to a small quantity as supplement of those extended by the Japanese grant aid scheme, machinery, equipment and other materials necessary for implementing the following training courses will be provided:

   (1) Undergraduate"s Basic Training;
   (2) Undergraduate's Advanced Training;
   (3) Trainor's Upgrading Training.

2. The decision of specification and selection of above-mentioned machinery, equipment and other materials will be made in due course through mutual consultation.

ANNEX IV

LIST OF PHILIPPINE STAFF

1. Executive Director

2. Assistant Executive Director

3. Counterpart personnel corresponding to the fields of the Japanese experts as listed in Annex II, engaged in each type of training;

   (1) Undergraduate's Basic Training at least five persons;
   (2) Undergraduate's Advanced Training at least five persons;
   (3) Trainor's Upgrading Training at least five persons;

4. Administrative Staff

   (1) Administrative officers
   (2) Secretaries
   (3) Typists
   (4) Drivers

5. Other Necessary Personnel

ANNEX V

LIST OF LAND, BUILDINGS AND FACILITIES

1. Buildings and facilities, already provided under the Japanese grant aid scheme, to be utilized for the implementation of the Proejct are:

   (1) Practice Rooms
   (2) Class Rooms
   (3) Printing and Copy Room
   (4) Conference Hall

2. Building and facilities to be provided for the implementation of the Project by the Government of the Republic of the Philippines are;

   (1) Executive Director's Room
   (2) Chief Advisor's Room
   (3) Japanese Experts' Room
   (4) Administrative Personnel Room
   (5) Others

ANNEX VI

THE JOINT STEERING COMMITTEE

1. Functions

The Joint Steering Committee will meet at least once a year and whenever necessity arises, and work:

(1) To formulate the annual operational plan of the Project in line with the Tentative Implementation Schedule set up under the frame-work of this Record of Discussions;

(2) To review the overall progress of the technical cooperation program set out in this Record of Discussions as well as the achievements of the above-mentioned annual operational plan;

(3) To review and exchange views on major issues arising from, or in connection with the technical cooperation programme.

2. Composition

(1) Chairman:

President of the Technological University of the Philippines

(2) Members

(a) Philippine Side:

(i) Vice President (Administration) of TUP
(ii) Vice President (Academic Affairs) of TUP
(iii) Executive Director of IRTC, TUP
(iv) Assistant Executive Director of IRTC, TUP
(v) Officer in charge of budget, IRTC, TUP
(vi) A representative of NEDA

(b) Japanese Side:

(i) Chief Advisor;
(ii) Experts designated by the Chief Advisor;
(iii) Resident Representative of Manila Office, JICA;
(iv) Personnel concerned to be dispatched by JICA if necessary;

NOTE: Officials of the Embassy of Japan may attend the Joint Steering Committee as observers.

TENTATIVE SCHEDULE OF IMPLEMENTATION
FOR THE PROEJCT ON
THE INTEGRATED RESEARCH AND TRAINING CENTER

The Head of the Japanese Mutual Consultation Team and the President of the Technological University of the Philippines have jointly formulated the tentative schedule of implementation for the Project as annexed hereto.

This has been formulated in connection with the Attached Document of the Record of Discussions signed between the Head of the Japanese Mutual Consultation Team and the President of the Technological Univeristy of the Philippines for the Project on the Integrated Research and Training Center on condition that necessary budget will be allocated for the implementation of the Project and that the schedule is subject to change within the framework of the Record of Discussions when necessity arises in the course of implementation of the Project.

Manila, November 3, 1982

Yoshiyuki Naito
Leader, The Japanese
Mutual Consultation
Team, Japan International
Cooperation Agency, Japan

Jose R. Vergara
President, Technological
University of the Philippines,
The Republic of the Philippines

TENTATIVE SCHEDULE OF IMPLEMENTATION

FISCAL YEAR	10 1982 3	4 1983 3	4 1984 3	4 1985 3	4 1986 3	4 1987
Term of cooperation	———	———	———	———	———	———
Japanese Expert (Long term)		Chief Advisor ———	———	———	———	———
		Mechanical Engineering ———	———	———	———	———
		Electric and Electronic Engineering ———	———	———	———	———
		Construction and Civil Engineering ———	———	———	———	———
Japanese Expert (Short term)		Subject to the necessity of the Project				
Machinery and Equipment		←———	———	———	———	
Counterparts' Training in Japan		A few persons each year				
Services of Philippine Staff		Executive Director ———	———	———	———	———
		Assistant Executive Director ———	———	———	———	———
		Counterpart Personnel ———	———	———	———	———
		Administrative Staffs ———	———	———	———	———

Note: This is formulated tentatively on the assumption that necessary budget will be acquired. This schedule is subject to change within the scope of the "Record of Discussions" in the future, if necessity arises.

Ⅱ－2　討議議事録（和文仮訳）

総合技術訓練センタープロジェクトのための技術協力に関する日本側計画打合チームとフィリピン政府関係当局との討議議事録

国際協力事業団（以下“ＪＩＣＡ”という）が組織し、内藤喜之を団長とする日本側計画打合チーム（以下“チーム”という）はフィリピンにおける総合技術訓練センタープロジェクトについての技術協力計画の詳細を策定するため、５７年１０月２６日より５７年１１月４日までの日程をもってフィリピン国を訪問した。

フィリピン滞在期間中、チームは上記プロジェクトの有効な実施のため両国政府がとるべき必要な措置に関してフィリピン側当局と意見を交換し、一連の討議を行った。

討議の結果、チームとフィリピン側関係当局はそれぞれの政府に対し、ここに添付する附属文書に記載する諸事項について勧告することに同意した。

マニラ　　昭和５７年１１月３日

内　藤　喜　之
団長　計画打合チーム
国際協力事業団

Jose R. Vergara
学長　フィリピン工科
大学

附属文書（和文仮訳）

Ⅰ　両国政府の協力

1. 日本国政府とフィリピン政府は、フィリピン国における産業発展に貢献する、教育訓練システムの拡張と改善を通じて技術部門に於ける教育と関連訓練を推進強化する目的の為、総合技術訓練センタープロジェクト（以下“当該プロジェクト”という）の実施において相互に協力を行う。
2. 当該プロジェクトは附表Ⅰの基本計画に基づいて実施される。

Ⅱ　日本人専門家の派遣

1. 日本国において施行されている法律および規則に従い、日本国政府は、コロンボ計画の通常手続により附表Ⅱに掲げる日本人専門家の役務を自己の負担において提供するため、JICAをを通じ必要な措置をとる。
2. 上記1項にいう日本人専門家およびその家族は、フィリピンにおいて、コロンボ計画により派遣されている第三国からの専門家に与えられている特権、免除および便宜に比べ、それに劣らないものを与えられる。

Ⅲ　機材供与

1. 日本国において施行されている法律および規則に従い、日本国政府は、附表Ⅲに掲げる当該プロジェクト実施に必要な資機材（以下“機材”という）を自己の負担において供与するため、ＪＩＣＡを通じ必要な措置をとる。

   主要機材は、日本国政府の無償資金協力計画ですでに供与がなされ、補完として、少量機材が、コロンボ計画の通常手続により供与される。
2. 上記1項にいう機材は、陸揚港あるいは空港にてフィリピン国側当局へＣＩＦ建てにて引渡される時、フィリピン政府の財産となる。そして、それら機材は、附表Ⅱに掲げる日本人専門家との協議をもって当該プロジェクトの実施のためにのみ使用される。

Ⅳ　研修員受入

1. 日本国政府において施行されている法律および規則に従い、日本国政府は、コロンボ計画の通常手続により日本における技術研修のため当該プロジェクトに関係するフィリピン人を自己の負担において受入れるため、ＪＩＣＡを通じ必要な措置をとる。
2. フィリピン政府は、フィリピン人が日本における技術研修から得た知識および経験が当該プロジェクト実施のため有効に用いられることを保証するための必要な措置をとる。

Ⅴ　フィリピン人カウンターパートおよび事務職員の役務

1. フィリピン国において施行されている法律および規則に従い、フィリピン政府は附表Ⅳに掲げるフィリピン人カウンターパートおよび事務職員の役務の提供を自己の負担で確保するために必要な措置をとることとする。

2. フィリピン人カウンターパート職員に関して、フィリピン国はプロジェクトにおける技術の有効な移転を充足するために、附表Ⅱに掲げる日本国政府より派遣される日本人専門家に対応する適切な資格を有する職員を必要人数配置する努力をすることとする。

Ⅵ　フィリピン国のとるべき措置

1. フィリピンにおいて施行されている法律および規則に従い、フィリピン政府は、自己の負担において次のものを措供するために必要な処置をとる。

(1) 附表Ⅴに掲げる土地、建物および附帯施設

(2) 上記Ⅲ条のＪＩＣＡを通じて供与される機材以外で、当該プロジェクト実施に必要な機材、装置、器具、車輌、工具、補充部品およびその他の物品の調達もしくは取替

(3) フィリピン国内における公務出張にかかわる日本人専門家に対する交通の便宜および旅費

(4) 日本人専門家およびその家族に対する適当な家具付住居施設

2. フィリピン国において施行されている法律および規則に従い、フィリピン政府は、次の経費を負担するために必要な措置をとる。

(1) 上記Ⅲ条に掲げる機材のフィリピン国内における輸送、据付、操作および維持に必要な経費

(2) 上記Ⅲ条に掲げる機材に対するフィリピン国内で課される関税、国内税およびその他の課徴金

(3) 当該プロジェクトの実施に必要な全ての運営費

Ⅶ　プロジェクト管理

1. 比工科大学学長は、プロジェクトの実施における全責任を負うものとする。

2. センター所長は、プロジェクトの総括として、プロジェクト実施に係る行政的、管理的事項の責任を負うこととする。

3. 日本人チーフアドバイザーは、センターの所長に対し、必要に応じては所長の了解のもとに、学長或いは如何なる者に対してもプロジェクトの実施に関する必要な助言を行うこととする。

4. 日本人専門家は、以下の事項につき、フィリピン人カウンターパートに対し、技術的指導と助言を与えることとする。

(1) 各コースに於ける訓練プログラムと訓練カリキュラム

(2) 日本国より供与された機材の据付、操作および維持

5. プロジェクトの効果的実施のため、附表Ⅵに掲げる機能と構成により、合同運営委員会（以下“委員会”という）が設置されることとする。

Ⅷ 日本人専門家に対するクレーム

フィリピン政府は、日本人専門家のフィリピン国内における職務の遂行に起因し、またはその遂行に関連して発生する日本人専門家に対する第三者からのクレーム又は責務が生じた場合には、危害をきよう保護するとともに、そのクレームに関する責任を負う、ただし、上記に述べた各個人の故意または重大な過失により生ずるクレームや責務については、この限りではない。前記に関し、疑問が生じた場合は、両国政府は、即時に、相互協議することとする。

Ⅸ 相互協議

両国政府は、本附属文書から生ずる、あるいは本附属文書に関連する主要事項について相互協議を行う。

Ⅹ 協力期間

本附属文書に基づく当該プロジェクトの技術協力期間は、５７年１１月３日より５年間とする。

しかしながら、協力期間第３年次中に、プロジェクト実施の進捗状況につき、プロジェクトの効果的実施の為に、協力期間の修正の可否につき評価するため、合同運営委員会による総合見直しが行なわれる。

附表Ⅰ　基本計画

附表Ⅱ　日本人専門家

附表Ⅲ　機材リスト

附表Ⅳ　フィリピン国側スタッフリスト

附表Ⅴ　土地、建物及び附帯施設のリスト

附表Ⅵ　合同運営委員会

附　表　1

基　本　計　画

1.　プロジェクトの目的

総合技術訓練センター（以下“センター”という）は、科学技術・工学分野を専攻する上級学生の訓練は勿論、主に、大学とその他の施設において科学技術・工学教育分野で教授及び関連訓練に従事するトレーナー等に対し向上訓練を実施する公開大学である。

2.　プログラムの目的

(1)　科学技術分野を専攻する上級学生の教育のための教科の一部として、基礎訓練コースを提供し実施する。（以下“学生基礎訓練コース”という。）

(2)　工学分野を専攻する技術学生の教育のための教科の一部として、高等訓練コースを提供し実施する。（以下“学生高等訓練コース”という。）

(3)　科学技術・工学分野で、教授及び関連訓練に従事する比工大とその他大学、施設の主としてトレーナーとその他の職員のために向上訓練コースを提供し実施する。（以下“トレーナー向上訓練コース”という）

(4)　センターにて行なわれるプログラムのための教科、その他訓練ソフトウェア及び管理システムの設計、開発、作成を行う。

3.　訓練システムの概要

日本政府の技術協力で包括される訓練システムの概要は以下のとおり；

訓　練　型	入　学　資　格	定　員	期　間
1.　学生基礎訓練		90	
a.　機械技術	ＴＵＰの技術各分野を専攻する上	30	6ケ月
b.　電気・電子技術	級学生及び同等と見られるもの	30	6ケ月
c.　建設・土木技術		30	6ケ月
2.　学生高等訓練		90	
a.　機械工学	ＴＵＰの工学各分野を専攻する学	30	6ケ月
b.　電気・電子工学	生及び同等と見られるもの	30	6ケ月
c.　建設・土木工学		30	6ケ月
3.　トレーナー向上訓練	大学とその他施設で技術・工学各	60	
a.　機械技術・工学	分野で教授及び関連訓練に従事す	20	3ケ月
b.　電気･電子技術･工学	るトレーナー及び同等と見られる	20	3ケ月
c.　建設･土木技術･工学	もの	20	3ケ月

附　表　Ⅱ

日本人専門家

1. チーフアドバイザー

2. 以下の分野の専門家
   (1) 機械工学
   (2) 電気電子工学
   (3) 建設土木工学

3. プロジェクトの円滑な実施の為、必要が生じた場合、短期専門家が派遣される。

附　表　Ⅲ

機 材 リ ス ト

1. 日本国政府の無償資金協力計画で供与された機材の補完として少量に限られるが、以下の訓練コースを実施するために必要な機械、装置その他機材が供与される。

(1) 学生基礎訓練

(2) 学生高等訓練

(3) トレーナー向上訓練

2. 上記機械、装置その他機材の仕様の決定と選定は相互協議を通じ適当な時に行なわれる。

附　表　Ⅳ

フィリピン国側スタッフリスト

1. 所　　長
2. 副 所 長
3. 各訓練型に従事する附表Ⅱに掲げる日本人専門家の各分野に対応するカウンターパート職員；
   (1) 学生基礎訓練　　最低　5名
   (2) 学生高等訓練　　最低　5名
   (3) トレーナー向上訓練　　最低　5名
4. 事務職員
   (1) 事　務　員
   (2) 秘　　書
   (3) タイピスト
   (4) 運　転　手
5. その他必要職員

附　表　　V

土地、建物及び附帯施設のリスト

1.　日本国政府の無償資金協力計画ですでに供与された建物及び附帯施設で、プロジェクトの実施のために使用されるもの；

(1)　実　習　室

(2)　教　　室

(3)　印刷・コピー室

(4)　会　議　室

2.　プロジェクトの実施のためにフィリピン国政府から提供される建物及び附帯施設；

(1)　所　長　室

(2)　チーフアドバイザー室

(3)　日本人専門家室

(4)　事務職員室

(5)　そ　の　他

附　表　Ⅵ

合同運営委員会

1. 機　能

合同運営委員会は、最低年１回及び必要が生じた時に開催され、

(1) この討議議事録の枠組の中で設置した実施計画案に沿ってプロジェクトの年間運営計画を作成する。

(2) 上記年間運営計画の成果と、本討議議事録で設置した技術協力計画の総合進捗状況の見直し。

(3) 技術協力計画に起因し、或いは関連する主要事項についての見直し及び意見交換。

2. 構　成

(1) 議　長

フィリピン工科大学学長

(2) メンバー

(a) フィリピン側：

(i) ＴＵＰ副学長（管理部門）

(ii) ＴＵＰ副学長（学術部門）

(iii) センター所長

(iv) センター副所長

(v) センター予算担当官

(vi) NEDA代表

(b) 日本側：

(i) チーフアドバイザー

(ii) チーフアドバイザーに指名された専門家

(iii) ＪＩＣＡ事務所長

(iv) 必要な場合、ＪＩＣＡ派遣職員

注意：日本大使館書記官が合同運営委員会にオブザーバーとして参加。

総合技術訓練センターのプロジェクト実施計画案

日本側計画打合チーム団長とフィリピン工科大学学長は、協力して、別添のようなプロジェクトの実施計画案を作成した。

これは、プロジェクト実施のための必要な予算が準備されること、およびプロジェクト実施の行程で必要があれば、討議議事録の範囲内で変更されることを条件に、総合技術訓練センタープロジェクトに関して、日本側計画打合チーム団長とフィリピン工科大学学長との間で署名された討議議事録の附属文書に関連して作成された。

マニラ　昭和５７年１１月　３　日

内　藤　喜　之
団長　計画打合チーム
国際協力事業団

JOSE R. VERGARA
学長　フィリピン工科大学

実施計画案

会計期間	57 10　　3	58 4　　3	59 4　　3	60 4　　3	61 4　　3	62 4
協力期間						
日本人専門家（長期）		チーフアドバイザー 機械工学 電気電子工学 土木工学				
日本人専門家（短期）		プロジェクトに於いて必要が生じた場合				
機械及び装置		←→	←→	←→	←→	
研修員受入れ		毎年２～３名、数ヶ月程度				
比側職員役務		所　長 副所長 カウンターパート職員 事務職員				

注意：必要な予算が確保されることを仮定して試案された。
この計画は“計議議事録”の範囲内で変更し得る。

Ⅱ　カリキュラム

TRAINING PROGRAMMES

Proposed Curriculum Structures*

for

A. Undergraduates's Basic Training

B. Undergraduate's Advanced Training

C. Trainor's Upgrading Training

INTEGRATED RESEARCH AND TRAINING CENTER

Training Programmes

Proposed Curriculum Structures*

for

A. Undergraduate's Basic Training

   a. Mechanical Technology
   b. Electrical and Electronic Technology
   c. Construction and Civil Technology

B. Undergraduate's Advanced Training

   a. Mechanical Engineering
   b. Electrical and Electronic Engineering
   c. Construction and Civil Engineering

C. Trainor's Upgrading Training

   a. Mechanical Technology and Engineering
   b. Electrical and Electronic Technology and Engineering
   c. Construction and Civil Technology and Engineering

Supporting Programme for Trainer

1. Teaching of all courses

2. Making text or guide book for the courses

3. Training of fundamental theory for the courses

---

* These curriculum structures were proposed by the Japanese Mutual Consultation Team, after series of discussions on relevant needs for the design of the training programs including the inspection of the engineering laboratory facilities at the IRTC. These curricula are intended to be suggestive and are very flexible.

A. "MECHANICAL PROCESSING COURSE" Duration: 6 months						
	TRAINING LEVEL				THEME OF LECTURES	
Subjects of Training	Basic	Advanced	Trainer	Machines and Instruments		(Common to 4 courses)
1. Universal Machine Tool and Fine Measurements	0			Precision Lathe, Vertical Milling Machine, Universal Tool Grinder, Cylindrical Grinding Machine, Hardness Tester (Shore, Brinell, Rockwell, Vickers), Charpy Impact Tester	Fine Measurement	Engineering Mechanics Mechanisms Personal Computer Programming Microcomputer Programming
2. Gear Cutting Machine	0		0	Universal Gear Hobbing Machine, Gear Shaping Machine	Measurement of Gear Tooth	
3. Electric Discharge Machine		0	0	Electric Discharge Machine	EDM Process	
4. Plastic Molding Machine		0	0	Injection Molding Machine	Plastic and its Molding	
5. Numerical Control Machine		0	0	Numerical Control Milling Machine Machining Center	Programming for Numerical Control	
B. "STATIONARY AND MARINE ENGINE COURSE" Duration: 6 months						
1. Petrol Engine	0		0	Engine Test Bed, Engine Analyzer	Outline of Thermodynamics Performance Test for internal combustion engine	Engineering Mechanics Mechanisms Personal Computer Programming Microcomputer Programming

Subjects of Training	TRAINING LEVEL			Machines and Instruments	THEME OF LECTURES	
	Basic	Advanced	Trainer			(Common to 4 courses)
2. Diesel Engine	0		0	Diesel Engine Generator Set, Fuel Pump Test Stand, Fuel Injection Pump	Outline of Thermodynamics Performance Test for internal combustion engine	Engineering Mechanics Mechanisms Personal Computer Programming Microcomputer Programming
3. Boiler and Steam Turbine		0	0	Steam Turbine Generator Set	Steam Thermodynamics Boiler Testing Steam Turbine Testing	
C. "REFRIGERATION AND AIR-CONDITIONING COURSE"						
1. Refrigeration	0			Condensing Unit, Fan Coil Unit, Ice Maker Unit, Freezer	Outline of Thermodynamics Principle of Refrigeration	Engineering Mechanics Mechanisms Personal Computer Programming Microcomputer Programming
2. Air Conditioning System		0	0	Packaged AC, Commercial Refrigeration and AC Trainer	Principle of Air-Conditioning	
D. "AUTOMOBILE ENGINEERING COURSE" Duration: 6 months						
1. Power Transmission	0		0	Steering Gear System Model, Differential Gear Model, Panetary Gear Model, Transmission Model	Mechanisms of Differential gear Automobile Mechanics	Engineering Mechanics Mechanisms Personal Computer Programming Microcomputer Programming

Subjects of Training	TRAINING LEVEL			Machines and Instruments	THEME OF LECTURES	
	Basic	Advanced	Trainer			(Common to 4 courses)
2. Brake System	0		0	Air Brake System Model, Hydraulic Disc Brake Model, Hydraulic Drum Brake Model		
3. Engine		0	0	Engine Cut Model (4 cycle, 2 cycle, Rotary), Compression Gauge, Exhaust Gas Analyser, Oscilloscope, Battery Charger		
4. Ignition Coil System		0	0	Ignition Coil System Model, Engine Ignition Test Bed		
E. "FOUNDRY COURSE"		Duration: 3 months				
1. Molding Sand Testing		0	0	Universal Sand Strength Testing Machine, Moisture Teller, Permeability Tester, Speed Balance		Property of Molding Sand
2. Mechanical Modling	0		0	Sand Rammer, Rotating Sand Washer, Sinter Meter, Ferro temp. Immersion Pyrometer, Mold Fracture Tester, Core Hardness Tester		
3. Chemical Analysis for Casting		0	0	Gas Determinator, Carbon Determinator, Sulphur Determinator		Industrial Chemical Analysis

BASIC ELECTRONIC CIRCUIT TRAINER EQUIPMENT

Room 407

1. Basic Electric Circuit Experiment Equipment
2. Semi-conductor Static Characteristics Measurement Circuit
3. Transistor Power Supply Circuit Experiment Equipment
4. Semi-conductor Application (Power Supply) Experiment
5. Oscillation Circuit Experiment Equipment
6. Amplifier Circuit Experiment Equipment
7. Bias Circuit Panel
8. Various Coupling AF Amplifier Circuit Panel
9. Differential Amplifier Circuit Panel
10. AM Modulation and Demodulation Circuit Experiment Equipment
11. AM Transmitter and Receiving Circuit Experiment Equipment
12. FM Modulation and Demodulation Circuit Experiment Equipment
13. Pulse Circuit Experiment Equipment
14. TV Training System
15. Sequential Control Trainer
16. Logic Circuit Trainer
17. Logic Circuit Experiment Equipment
18. Feedback Control Trainer
19. Microwave Measuring Trainer
20. Servo Mechanic Training System
21. Computer Training System
22. Computer Basic Experiment Equipment
23. Interface
24. A-D Conversion Experiment Equipment
25. D-A Converter Circuit Panel
26. Oscilloscope
27. Universal Counter
28. RC Oscillator
29. AC Volt Meter
30. Sweep Generator with Marker
31. Pattern Generator
32. Digital Multimeter
33. Distortion Meter
34. Ammeter

    Ammeter
35. Slide Ohm
36. Power Supply

ELECTRICAL ENGINEERING EQUIPMENT

Room 409

1. M-G Control Training Unit
2. M-G Automatic Control Unit
3. Transformer
4. Ward-Leonard Training System
5. DC-AC Universal M-G Training System
6. Transmission Line Testing System
7. Electric Dynamomerer
8. L.C.R. Load Resistor
9. Portable Generator w/Diesel Engine
10. Synchronizing Generator Parallel Operation System
11. DC Power Source

II. ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE TITLES	TRAINING LEVELS			MACHINED TO BE USED Facilities installed at the EE Laboratory
	Basic	Advanced	Trainor	
1. Power Engineering I	0		0	1, 2, 3, 10, 11, 8 (Refer to machine list Room 409)
2. Power Enginering II		0	0	4, 5, 6, 7, 9 (Refer to machine list Room 409)
3. Fundamental Electronics	0		0	1, 2, 3, 4, 5, 6, 26 to 36 (Refer to machine 7, 8, 9, 10, 12 list Room 407)
4. Advanced Electronics		0	0	11, 13, 14, 19, 23, 24 (Refer to machine list 25, 26 to 36 in Room 407)
5. Control Engineering		0	0	15, 18, 20, 21, 22 (Refer to machine list in 26 to 36 Room 407)
6. Computer	0	0	0	16, 17, 21, 22 (Refer to machine list in Room 407)

III. CONSTRUCTION AND CIVIL ENGINEERING

COURSE TITLES	TRAINING LEVELS			MACHINES TO BE USED Facilities installed in Room 112
	Basic	Advanced	Trainor	
1. Surveying			0	Transit, Personal Computer
2. Soil Engineering I	0		0	Liquid Limit Test Set Compaction Test Set Consolidation Test Apparatus Single Door Small Oven Centrifugal Extraction Apparatus Electric Air Compressor Vehicles for field work
Soil Engineering II		0	0	
3. Materials Concrete I	0		0	Universal Testing Machine Hobert Mixer Mortar Flow Table with Scale Semi-automatic Vicat Apparatus Laboraty Concrete Mixer 2" Cube Mould with Base Plate Specific Gravity Test Set Internal Concrete Vibrator Capping Set for 15 cm Cylinder Proving Ring for Compressive Load
Concrete II		0	0	Same equipment for Concrete I and Concrete Core Drilling Machine Hydraulic Slabbing Saw Cement Autoclave
Asphalt		0	0	Los Angeles Abrasion Machine Asphalt Oven Ductility Testing Machine Furol Type Saybolt Viscosimeter

COURSE TITLES	TRAINING LEVELS			MACHINES TO BE USED Facilities installed in Room 112
	Basic	Advanced	Trainor	
Timber	0	0	0	Universal Testing Machine
Metal	0	0	0	Universal Testing Machine AC Arc Welder Unit (Room 206) Rockwell Hardness Tester Brinell Hardness Tester Shore Hardness Tester Charpy Impact Tester
4. Reinforced Concrete I	0		0	Universal Testing Machine Hobert Mixer Mortar Flow Table with Scale
Reinforced Concrete II		0	0	Semi Automatic Vicat Apparatus Laboratory Concrete Mixer 2" Cube Mould with Base Plate Specific Gravity Test Set Internal Concrete Vibrator Capping Set for 15 cm Cylinder Proving Ring for Compressive Load
5. Structural Engineering		0	0	Universal Testing Machine Personal Computer Vertical Milling Machine Universal Tool Grinder Tools and Measuring Instruments

CURRICULUM

A. Undergraduate's Basic Training

Emphasis will be on familizalization with the operating principles of selected basic machines including the acquisition of added skills and technical information.

B. Undergraduate's Advanced Training

In addition to the machines as in A and with the same emphasis, exposure to other machines of the next higher level and to integrate application of specific physical science, technological and engineering concepts, involved in their operation.

C. Trainor's Upgrading Training

To familizalize the trainors (counterparts, faculty staff and others) in the operating principles of the machines in all levels with the end in view of preparing them to transfer the training to undergraduate students.

Equipment training will be integrated with instructional technology including the preparation and production of instructional materials.

MINIMUM TARGET OF TRAINING

A. Undergraduate's Basic Training

1. Acquisition of Skills
2. Familizalization with Operating principles
3. Understandings of applied Physical Science, Technological and Engineering concepts
4. Safety consciousness

B. Undergraduate's Advanced Training

1. Acquisition of skills
2. Familialization with Operating principles
3. Understandings of applied Physical Scence, Technological and Engineering concepts
4. Safety consciousness
5. Familialization with operation of highly precision machines
6. Solving of problems and application of principles
7. Design and execution of job specimens
8. Costing/cost estimates of job

C. Trainor's Upgrading Training

1. Acquisition of skills
2. Familialization with Operating principles
3. Understandings of applied Physical Scince, Technological and Engineering concepts
4. Safety consciousness
5. Familizalization with operation of highly precision machines
6. Solving of problems and application of principles
7. Design and execution of job specimens
8. Costing/cost estimates of jobs
9. Design and preparation of instructional materials
10. Design of measuring instrument to monitor student progress

Ⅳ　総合技術訓練センター（IRTC）の現状

Ⅳ－1　フィリピン工科大学（TUP）の組織について

ＴＵＰは、次のような学部（コース）編成とおり、学生数及び教員数を示すと下表のとおりである。

ＴＵＰの学部及び大学院の学生数及び教員数

（１９８２～１９８３年度　第１学期現在）

		修業年限	学生数	教員数			備考
				専任	非常勤	計	
学部	工業工学学部		5,241	63	10	73	
	テクニカルコース	2年制	3,157	−	−	−	
	テクニシャンコース	3年制	2,084	−	−	−	
	工業教育学部	4年制	663	−	−	18	
	建築造形学部	4年制	182	14	1	15	建築コース学生129 造形コース学生　53
	工学部	5年制	488	10	18	28	
	教養部			75	29	104	すべての学部学生の基礎教育を行う
	計		6,574	−	−	238	
大学院	教育（博士）	−	74	−	−	−	
	工業教育（修士）	−	130	−	−	−	
	教員養成（修士）	−	182	−	−	−	
	計	−	386	3	11	14	

Ⅳ－2　センターの目的と機能

センターは、ＴＵＰの管理下におかれるが、ＴＵＰの学部等の組織とは独立した形態をとって存在する開かれた教育機関である。

すなわち、センターは、学生、教官、教育、行政官、企業家、労働者及び研究者に対し、技術、工学教育及び訓練の開発に関する適切な施設、実習、実質のあるプログラムを供することを目的として設立されたものである。

センターにおいては、(1)　基礎訓練コース（basic training course）、(2)　高等訓練コース（aduanced training coarse）、(3)　向上訓練コース（upgrading training course）の３つのコースが用意され、ＴＵＰの学生及び他大学の学生、社会人等に対して、適切な実験、実習教育を行われることになる。基礎訓練コース及び高等訓練コースは、それぞれＴＵＰの機械、電

気・電子、土木に係る第3年次（テクニシャンコース）及び第5年次（エンジニアリングコース）の学部学生のうち、成績の優秀な者を各分野30名ずつ選抜して、TUPの学部教育とは別に、ブラッシュアップを目的に機械実習及びその理論についての学習を6か月間にわたり行うものである。また、トレーナー向上訓練コースは、機械、電気・電子、土木の分野に係るTUP以外の大学の学生、教育者、行政官、企業家等に対し、機械実習及びその理論についての学習を3か月間行うものである。修了者には、特別な修了証書を授与し訓練を魅力あるものにしていく予定である。

このほかセンターは、TUPがフィリピン国内における技術教育の振興の中心となっていることにかんがみ、技術、工学教育のためのカリキュラムやその他のソフトウェアの設計、開発策定を行う役割を担っている。

Ⅳ－3　センターの予算とスタッフの配置

IRTCのための予算はTUPとは切り離されて措置されている。

今年度（1982年1月～12月）のIRTCの歳出予算としては、2,275,000ペソ（人件費375,000ペソ、維持・運営経費900,000ペソ、機材調達費1,000,000ペソ）が割り当てられているが、この9月までに支出された額は、IRTCが発足まもないこともあって、維持・運営経費に係る200,000ペソ弱にすぎない、その内訳は以下のとおりである。

旅　　費	250　ペソ
通　信　費	349　〃
営　繕　費	14,837　〃
輸　送　費	43,447　〃
消耗品費	74,280　〃
光熱水道費	53,698　〃
車輌維持費	4,444　〃
合　計	191,305　〃

来年度（1983年1月～12月）のIRTCの歳出予算としては、一般経費1,275,000ペソ、機材調達費442,000ペソ、合計1,717,000ペソが承認されている。明細は以下のとおりである。

事　　項	金　　額
人　件　費：	939,270 ペソ
職員給与	855,270
住居手当	84,000
維持・運営経費：	278,000 ペソ
旅　　費	1,000
通　信　費	5,000
営　繕　費	20,000
輸　送　費	30,000
雑　　費	30,000
消耗品費	85,000
光熱水道費	100,000
車輌維持費	7,000
予　備　費：	57,000 ペソ
機材調達費：	442,000 ペソ
合　　計	1,717,000 ペソ

IRTCのスタッフは、カウンターパートとなるべきインストラクターと助手で構成される。カウンターパートは、機械、電気・電子、土木の各分野においてそれぞれ5名ずつ合計15名を予定しているが、現在確保されているのは、機械3名（工場担当の1名を含む。）、電気・電子1名、土木2名の計6名にすぎない。これらのカウンターパートに加えて工学部の教官がIRTCの教育に協力することになっており、現在のところ、機械1名、電気・電子2名、土木1名の学部所属教官が協力体制にある。

Ⅳ－4　大学とセンター及び関連官庁との関係

すでに述べたようにIRTCは、TUPの管理下におかれるが、TUPの学部等の組織とは独立しており、TUP学長の直轄下にある。予算面でもIRTCの予算は、TUPの予算とは別個に計上されている。

大学の重要な予算や学術的事項に関しては、教育文化スポーツ大臣を長とし、TUP学長、経済開発庁（NEDA）次官を構成員とする大学理事会において、その方針が決定されることになっている。

Ⅳ－5　建物及び機材等の使用状況及び計画

IRTCの施設として供与された建物の各室には、それぞれ管理責任者が定められており、視

察の結果からも施設各部の保全は概して良好であると認められた。供与機材はすべてIRTCの建物内の所定の室に据付を終り、一定の機材群に対して取扱責任者が定められている。

以下、機械、電気、土木各工学部門別に使用状況及び計画をのべる。

（機械工学部門）

機械工学部門では、全供与機材の内、鋳造関係の機材を除いた残りの半数以上は、既に、IRTCの技術者の手により稼動されている状態にあったが、その他の機材は

(1) その取扱説明書だけでは、その操作原理が理解にしいか、又は制御方法が不明のため、運転されていない。

(2) 当該供与機材の附属品が完備していないため、例えば、工作機械については、何れも切削工具が1個だけ附属品として供与されているだけであり、又各機械によって加工された工作品の工作精度を評価するために必要な精密測定器具は殆んど供与されていないため、その機能を十分発揮しないまゝ使用されている状態である。

（電気電子部門）

電気電子部門は、視聴覚機材、コンピューター、等、既に有効に利用され、充分に使用されている部分が見られた。

参考資料(2)に見られる通り、セミナー等も開催されており、好評を博していた。

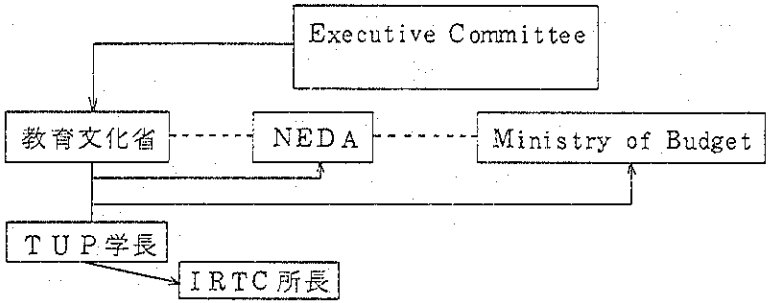
（土木工学部門）

- 土木の実験室は、その一部の教員控室と測量機材置場が使われている。
- 供与機材のうち、特に測量機材は、TUPのコースにすでに使用されている。
- ビデオによる、建設現場における材料試験などの紹介

  このような活動は非常に有意義である。このプログラムは、IRTCのビデオ担当者と、2人の日本人協力隊員（久保田氏、渡辺氏）およびTUPの土木技術者によって製作された。なかなか専門家を派遣できない場合、もし日本に同一の機材があれば、日本でその使用法をビデオにとり現地に送って見てもらうということができるのではなかろうか。

  また比国内でも、この方法により、知識を広められそうである。

1. 専門家の身分	専門家はカウンターパートに対しアドバイザーとして務める。 訓練計画の実施においてカウンターパートに助力を与える併せて、カウンターパートに対し技術的助言を与える。専門家はカウンターパートと直接関係し、カウンターパートが学生に責任を有する。
2. 専門家が教授するカウンターパートの数	訓練計画の実施に於いて 1対1 チーフアドバイザー　→所長 1対グループ 専門家　→カウンターパート5名（各分野少くとも5名）
3. 訓練の範囲と程度	訓練教材等の準備 1. 活動／実験表 2. 視覚教材 3. 見本作成 プログラムの作成 プログラムの評価（全専門家、CP、学長と共同）
4. 専門家の執務時間	9：00～12：00　3時間 2：00～ 5：00　3時間 6時間 6時間／日　5日間／週　30時間／週 訓練充当：3時間／日 相談 〃 ：3時間／日　} 月曜日から木曜日まで 相互協議ミーライング　金曜日

5. カウンターパートの募集先	技術大学（Masters Degree 修了者） ※ University of the Philippines ※ Mapua Institute of Technology ※ Be La Salle University
6. TUP（IRTC）と政府機関の関係	
7. JOINT STEERING COMMITTEE に政府機関からの参加の可否	A representative of NEDAが参加する。
IRTCプロジェクト	
1. カリキュラム＆シラバス	
A. Undergaduate's Basic Training	基礎的機械の操作原理に親しませる事を中心とし、補完的技能と技術的知識も併せて取得させる。
a. Mechanical Technology	
b. Electric & Electronics Technology	
c. Construction & Civil Technology	
B. Undergraduate's Advanced Training	Aの内容に加え、更に程度の高い機械を操作させると同時に機械操作に付属する具体的な物理科学及び technological and engineering な概念を応用することを学ばせる
a. Mechanical Engneering	
b. Electric & Electronics Engeering	
c. Construction & Civil Engineering	

C. Trainor's Upgrading Training a. Mechanical Technology & Engineering b. Electric & Electronics Technology & Engineering c. Construction & Civil Technology & Engineering	Trainor（カウンターパート、教職員その他）にA.B.に係る機械の操作原理に親しませ最終的に、undergraduate studentに訓練が出来るようにする 機械訓練は指導教材の準備と作成を含む指導技術も併合される。
2. 学級人数と期間 A. Undergraduate's Basic Training B. Undergraduate's Advanced Training C. Trainor's Upgrading Training	 ３０名×３級　　６ケ月 ３０名×３級　　６ケ月 ２０名×３級　　３ケ月
3. カウンターパートの資格	各分野（現状は１０名程度配置済となっている） Engineer （４名）　＋ B.S. Shop Major （数名） ※ 有資格者　　※ 補完訓練／専門化 ※ M.S.所持者　　※ shop teacherとして３～５年の経験 ※ 産業経験者 ※ 大学での成績が優秀なもの
4. カウンターパートの職務	1. 学生への指導 2. 同僚への指導 3. 指導計画の準備
5. 恩　典	国民健康保険 医　療 手　当 残業手当 有給休暇

6. 学　　生	
1. 応募資格	Shop作業、理数科において良い成績を残した上級学生
2. 就　　職	就職あっせんサービス有
7. 入学資格	College of Industrial Technology のDeanに推せんされた、shop作業、理数科において良い成績を残した上級学生
8. 選定方法	上記の者から選定する
9. 教材の支給	無料支給
10. 学 期 間	4月～ 5月　　夏休み 6月～10月　　Semester 10月下～11月上　　Semester Break 11月～ 3月　　Semester

V 参考資料

資料－1 フィリピン工科大学システム

THE TECHNOLOGICAL UNIVERSITY

OF THE PHILIPPINES SYSTEM

THE TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

Established in 1901 by Act. No. 74 of the Philippine Commission and converted by Republic Act 2237 into College of Arts and Trades and later elevated as a university presently known at Technological University of the Philippines in 1978. This institution has endeavored to contribute to the realization of individual and social change and the advancement of human freedom.

UNIVERSITY OBJECTIVES

1. To provide higher and advanced vocational, technical, industrial technological and professional education and training in the industries and technology, and practical arts, leading to certificates, diplomas and degrees.
2. To provide progressive leadership in applied research, developmental studies in technical, industrial and technological fields and production using indigenous materials, effect technology transfer in the countryside; and
3. To assist in the development of small and medium scale industries in identified growth centers.

The university's programs and projects are in line with the provisions of Presidential Decree No. 6-A, otherwise known as the Educational Development Decree of 1972. This decree covers the education's basic principles and systems; and the non-formal education system; and the methodologies guiding the implementation of the ten-year development program.

In line with this decree, the university has, for the past years:

a) caused the improvement of curriculum programs and quality of instruction at all levels through: improvement of physical facilities; adoption of cost-saving instructional technology; and training/retraining of teachers and administrators.

b) made available educational opportunities through provision of financial assistance to deserving students, skills training program for out-of-school youth and continuing education for non-literate adults.

c) strengthened and expanded existing programs and implemented new training programs.

Presidential Decree No. 1518 issued on June 11, 1978 which raised the institution to what is now Technological University of the Philippines states that:

> "The university shall provide higher and advanced vocational, technical industrial, technological, and professional education and training in the industries and technology and practical arts leading to certificates, diplomas and degrees. It shall provide progressive leadership in applied research, developmental studies in technical, industrial and technological fields and production using indigenous materials, effect technology transfer in the countryside; and assist in its development of small and medium scale industries in identified growth-centers."

ORGANIZATION STRUCTURE

There is a Board of Regents which serves as the policy making body. Chaired by Hon. Onofre D. Corpuz, Minister, Ministry of Education, Culture and Sports, with Dr. Jose R. Vergara, Presidnet, Technological University of the Philippines as the Vice Chairman and Hon. Ramon B. Cardenas, Deputy Director, NEDA, as member, the board directs the major fiscal and academic functions.

Plans and programs are implemented thru various colleges, units and centers. The organizational structure is attached.

There is a main campus, TUP Main where six colleges offer programs from undergraduate level to the graduate level.

THE GRADUATE SCHOOL

The Graduate School is responsible for planning, executing and controlling graduate education related programs.

Dr. Iluminada G. Espino, the dean, supervises three (3) full time and eleven (11) part-time faculty members. As of the first semester, 1982 - 83, a total of three hundred eighty six (386) enroled in various programs.

Doctor of Education (Ed D.)	74
Master of Arts in Industrial Education (MAIE)	130
Master of Arts in Teaching (MAT)	182

THE COLLEGE OF ENGINEERING

The College implements a technician-based program in such areas as Mechanical Engineering, Electrical Engineering and Civil Engineering. It maintains a continuous linkage and consultation with other engineering institutions and industries from which outcomes the curricula programs are made flexible to meet relevant needs.

The College which is under the deanship of Prof. Perla S. Roxas has twenty eight (28) faculty members of which ten (10) are on full time basis and the rest on part-time basis.

The college which started operating in 1979 expects to graudate the first batch of eighteen (18) students in March. These are technician graduates already employed in industries who opted to upgrade themselves to finish the Engineering program. As of the first semester, 1982 - 83, a total of four hundred eighty eight (488) students are enrolled in all levels.

THE COLLEGE OF ARCHITECTURE AND FINE ARTS

This College is in-charge of implementing programs for training future architects, artists and draftsmen. It also maintains linkages with agencies and institutions involved in the furtherance of arts, architectural designs and structural designs.

The College which is under the supervision of Dean. Diosdado Nicdao Jr. has fourteen (14) full-time and fifteen (15) part-time faculty members. It is serving one hundred twenty nine (129) B.S. Architecture and fifty three (53) B.S. Fine Arts students.

THE COLLEGE OF INDUSTRIAL EDUCATION

The College implements programs for training technician teachers, vocational and industrial arts teachers.

Dean Teofilo A. Sison heads eighteen (18) faculty members. A total of six hundred sixty three (663) students were enrolled in the 4-year teacher education program during the first semester, 1982 - 83.

THE COLLEGE OF INDUSTRIAL TECHNOLOGY

This College implememts 2 - 3 year programs for developing skilled craftsmen and technicians.

The College is manned by Dean Jorge T. Dagum. Of the seventy three (73) faculty members, sixty three (63) are on full time basis. A total of five thousand two hundred fifty one (5251) students were enrolled during the first semester 1982 - 83. The breakdown of the enrolment is as follows:

2-Year Technical

Automotive Technology	324
Ceramics Technology	20
Drafting Technology	614
Electrical Technology	867
Food Trades	130
Foundry Technology	17
Furniture and Cabinet Making Technology	5
Garments Trades	33
General Radio and Communications Operator	247
Printing Technology	61
Sheet Metal Technology	13
Stationary Marine Engineering	695
Tool and Die Making Technology	73
Welding Technology	58

3-Year Technician

Civil Technology	265
Electronics Technology	806
Mechanical Technology	694
Refrigeration and Air Conditioning Technology	319

THE COLLEGE OF APPLIED ARTS AND SCIENCES

The College is responsible for providing quality and relevant instruction in the Arts and Sciences to develop the academic skills in Mathematics, Physical Sciences, Languages and Social Sciences. Programs for physical and cultural growth are also provided.

The College which is under the deanship of Dr. Vilma C. Bati has twenty five (25) full time and twenty nine (29) part-time faculty members. The College directly serves all students in the other colleges in terms of basic courses.

THE NATIONAL CURRICULUM DEVELOPMENT CENTER FOR PRACTICAL ARTS

The Center is tasked to formulate coherent programs for work education in the secondary level in line with the major educational development thrusts of the government. The Center also prepares, evaluates and refines appropriate curriculum materials for Practical Arts. The Director of the Center is Prof. Radames Doctor.

THE CURRICULUM DEVELOPMENT AND EDUCATIONAL TECHNOLOGY

The Office is in-charge of development and production of curriculum materials for shop and related courses. Major bulk of the work is in the preparation of Modules. The Director of the Office is Prof. Cristeto P. Bonilla and fourteen (14) staff members work with him.

OFFICE OF THE EXTENSION AND EXTERNAL AFFAIRS

This Office which is under the directorship of Dr. Rodolfo Y. Baking is responsible for the transfer of technology to the countryside by providing consultation services and conducting occupation-based technical courses. It also takes charge of the TUP Alumni affairs.

JOB PLACEMENT OF GRADUATES

Job placement of graduates is one of the major services provided by the Office of Student Affairs. The office assists both the graduates as well as the employers in selecting the right person for the right job. The placement officer maintains a continuous communication with the different industrial firms and schools which are in demand of workers. Placement ads which are usually received through writing or by phone are posted on the bulletin board and applicants are preliminarily screened by the placement officer before they are referred to the prospective employers.

Because TUP has been the leader in technical and technician education, the graduates are readily absorbed by the industry.

OTHER CAMPUSES

The Manila Technician Institute (MTI) at Taguig, Metro Manila and the Visayas Technician Institute (VTI) at Bacolod City are actively involved in the training of industrial technicians.

The MTI is charged to Dr. Aniano San Diego, the Assistant Executive Director and sixty-five (65) faculty members. As of June 1982, the enrolment at the institute is as follows:

Automotive Technology	56
Chemical Technology	91
Civil Technology	86
Electrical Technology	97
Electronics Technology	197
Mechanical Technology	104

Engr. Leoncio M. Jamora Jr. is the director of the VTI and he has fifty-nine (59) faculty members. The institute offers 3-year and 5-year Industrial Technician courses, the latter designed primarily for the working industrial sector hence offered in the evening. For the school year 1982 - 83, the enrolment at the institute is as follows:

First Year	188
Second and Third Years:	
Automotive Technology	24
Chemical Technology	53
Electrical Technology	46
Electronics Technology	39
Mechanical Technology	72
Refrigeration and Air Conditioning Technology	21

The evening classes have twenty eight (28) first year and thirteen (13) second year students.

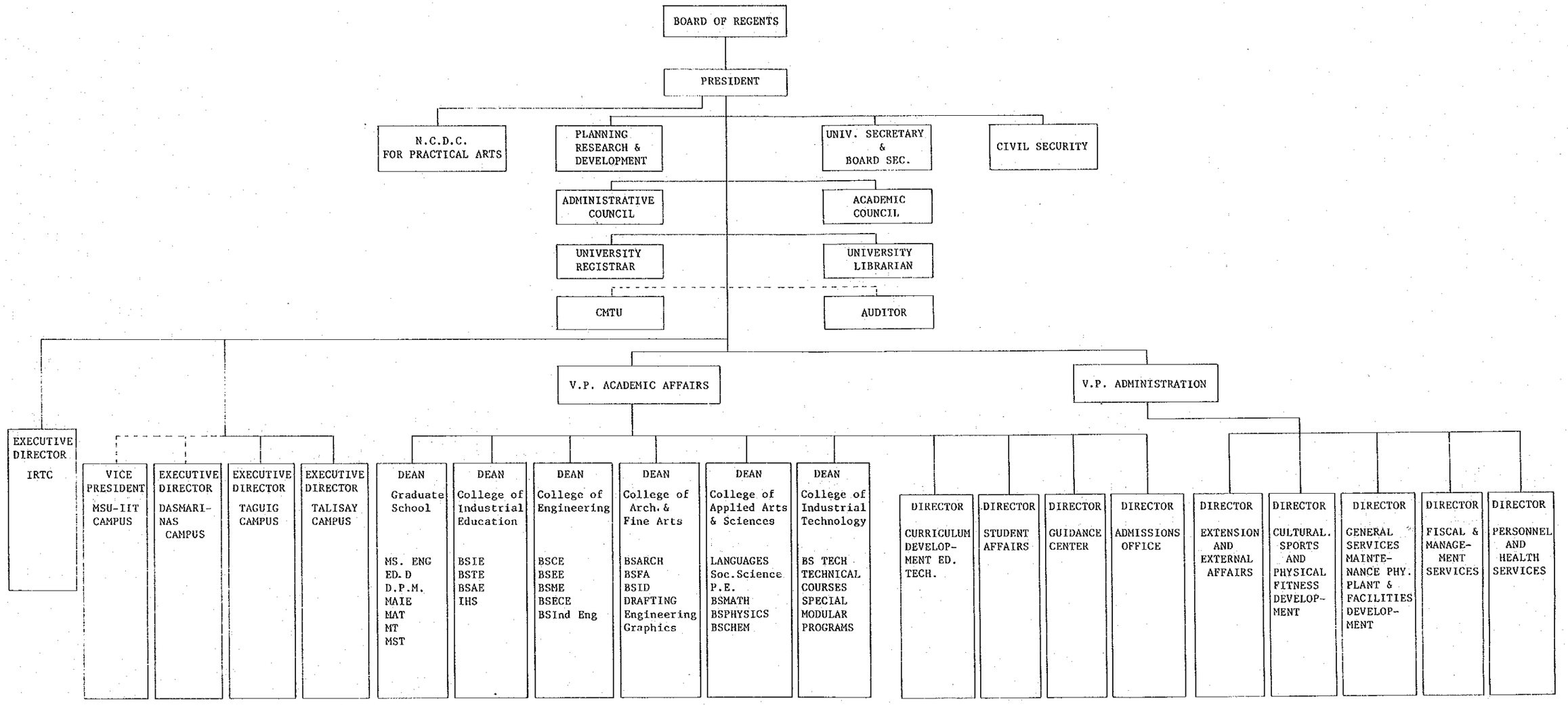
The newly opened campus at Cavite is intended to serve technicians in a typical industrial site.

With Prof. Carlos Trinidad as the Executive Director and twenty one (21) staff members, the campus has for its initial operation the following students:

Electronics/Electrical Technology	45
Mechanical Technology	29
Civil Technology	10
Automotive Technology	7
Short courses	5

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

ORGANIZATION CHART



資料－２　センター行事表（昭和５７年８月３１日現在）

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

Manila

Integrated Research and Training Center

SUMMARY OF ACTIVITIES AS OF AUGUST 31, 1982

Initial operations at the center started immediately after the official turnover on May 15, 1982. This was done on a selective basis considering the available technical staff at the center, the requests for services from one side agencies and the need to serve the engineering and technical students.

I. ON USE OF FACILITIES

1. All five classrooms are now fully utilized by engineering and technical students for lecture classes from 7:00 A.M. to 9:15 P.M., Monday to Saturday.

2. The following laboratories/shops are now being used by students.

   2.1 Electrical Engineering Laboratory
   2.2 Electronics Engineering Laboratory
   2.3 Computer Division
   2.4 Civil Engineering Laboratory
   2.5 Audio Visual Education
   2.6 Physics Laboratory
   2.7 Printing Design and Product Development
   2.8 Woodwork

II. ON SEMINARS AND WORKSHOPS

1. Faculty Training on the operation of Specific Equipment was conducted August 17 - 27 by Japanese Experts through the manufacturers and Distributors (Kumagai Gumi Inc.) These machines include:

   1.1 Plastic Molding Machine
   1.2 Universal Tool Grinder
   1.3 Electrical Discharge Machine
   1.4 Ryobi Printing Machine
   1.5 Photographic Equipment

Training Experts are:

1. Mr. H. Fukuda
2. Mr. H. Ikeda
3. Mr. Thomas Uhing
4. Mr. Tan Bainyam

2. A one (1) month training for Administrative Staff and Faculty on the Use and Operation of Computers was started on August 2. Emphasis was on the Familiarization of the Use of Word Processors ("Phantom Pen") and the Data Base ("IRIS 80") in registration, cashiering, budgeting, accounting, auditing, library work and writing of reports.

3. Another one (1) month seminar for faculty of the College of Architecture and Fine Arts on Design and Product Development will be conducted by September 15th.

III. ON AUDIO VISUAL TECHNOLOGY

1. A canned program on Construction Technology was designed and produced for Civil Engineering students. Based on actual construction of highways along Don Mariano Marcos Avenue. The package emphasize soil testing and concrete mixing, pouring and testing.

2. A second project is the packaging of a program on the laying of foundation for the Light Railway Transit (LRT) System.

3. Other agencies have requested for training on Audio Visual techniques and services on program packaging. These include:

   3.1 Commission on Audit
   3.2 National Manpower and Youth Council
   3.3 Philippine Navy

SOME PROBLEMS

1. Need for Japanese technical experts in Civil Engineering, Mechanical Engineering and Electrical Engineering who will assist the IRTC Staff in design of relevant technology programs.

2. Need for training experts in the operation of other equipment in the Mechanical Engineering laboratory, Stationary and Marine Engine Room, Automotive and Refrigeration and Airconditioning Room.

NOTE: Mr. H. Fukuda, Japanese consultant on installation of equipment at the IRTC was an effective trainor in the operation of some machines.

3. Need for a Technical Cooperation scheme for continuous development of programs and faculty via experts and staff training.

資料－３　センター教職員配置メモ

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

Manila

August 30, 1982

TUP Memorandum

TO: All Concerned

1. Effective immediately the following instructors/professors will be on full detail to the Integrated Research and Training Center and be the faculty shop-incharge and custodian of all equipment and facilities in the specified shop.

a)	Ramon Amoncio	105 - Generator & Control Room 106 - Boiler Room 107 - Stationary and Marine Engine Room 108 - Mechanical Engineering 109 - Precision Mechanical Measuring Room
b)	Loreto Apilado	112 - Civil Engineering
c)	Valentino Angeles	206 - Refrigeration and Air-conditioning
d)	Valentino Angeles	207 - Automotive Engineering
e)	Alfredo Cate	209 - Physics Laboratory
f)	Norberto Ramos	210 211 313 - Classrooms 314 315
g)	Domingo Raping	306 - Woodwork
h)	Gelacio Dagum	308 - Printing and Publication 310 - Design Product Development
i)	Jerome de la Torre	407 - Electronics Engineering 409 - Electronical Engineering
j)	Wilfredo Lopez	Entire Fifth Floor
k)	Quirino Almeniana	Foundry

2. Mr. Alfonso de los Reyes will clear the faculty concerned of all property responsibilities from their present shops.

3. Prof. Perla Roxas and Prof. Fernando Alfonso will effect an inventory in the presence of the Supply Officer and faculty concerned for issuance of memorandum receipt of equipment.

4. Prof. Jorge Dagum, OIC, College of Industrial Technology will immediately make adjustments in programs/look for replacements for these faculty members.

5. For immediate compliance.

JOSE R. VERGARA
President

資料－4　ＴＵＰ２年制カリキュラム

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

Manila

GENERAL INFORMATION

TWO-YEAR TRADE-TECHNICAL EDUCATION CURRICULUM

The University offers a differentiated program of technical education for graduates of the secondary curriculum. The aims of the Trade-Technical Education Curriculum are (1) to prepare workers to enter industry and (2) to upgrade employer workers for advancement in industry.

The courses offered all of which may be completed in two regular school years in the day program; are:

1. Automotive Technology
2. Ceramic Technology
3. Cosmetology
4. Drafting Technology
5. Electrical Technology
6. Food Trades
7. Foundry Technology
8. Garment Trades
9. Furniture & Cabinet Making
10. Printing Technology
11. Stationary Marine Eng'g
12. Tool & Die Making Tech.
13. Welding Technology
14. Wood Patternmaking Tech.
15. Sheet Metal Technology

Class and shop sessions for day students are conducted during the regular days from Monday through Friday.

Evening sessions are also scheduled for the two-year Trade-Technical Education Curriculum to accommodate students who work in industry during the day. Class and shop sessions for evening students are conducted from Monday through Saturday as follows:

Related Subjects - 3 nights a week - 5:15 p.m. - 9:15 p.m.
Shopwork - 3 nights a week - 5:15 p.m. - 9:15 p.m.

Only those who graduates of the Two-Year Technical Curriculum are qualified to take a field of concentration in Shopwork, Drafting, Mathematics, Physics, or Chemistry. Students who are entering 1st Year of the Four-Year Teacher Education Curriculum can take Industrial Arts as a field of concentration. Students entering the 1st Year, and Technical Graduates entering the

Third Year of the Four-Year Teacher Education Curriculum are required to qualify in the selective examination which is given every year the first semester begins.

TUITION AND OTHER FEES (per semester)

DAY PROGRAM

TUTION FEE	₱ 120.00
PLUS	
Registration Fee (New Students only)	5.00
Laboratory Science Fee (per subject)	5.00
Student Privilege Fee	5.00
Library Fee	5.00
Medical and Dental Fee	5.00
Athletic Fee	5.00
Late Registration Fee (Fine)	5.00
Special Removal Fee (per subject)	5.00
Validating Examination Fee (per subject)	5.00

EVENING PROGRAM

Shopwork	₱ 70.00
Drawing or Laboratory Courses	20.00
Academic Subjects	6.00/unit
Physical Education	10.00
PLUS	
Registration Fee (New Students only)	5.00
Laboratory Science Fee (per subject)	5.00
Student Privilege Fee	5.00
Library Fee	5.00
Medical and Dental Fee	5.00
Athletic Fee	5.00
Late Registration Fee (Fine)	5.00
Special Removal Examination Fee (per subject)	5.00
Validating Examination Fee (per subject)	5.00

MODE OF PAYMENTS

50% ..... Tuition Fee Plus other Fees-Payment upon enrolment.

25% ..... Before Preliminary Examinations.

25% ..... Before Semi-Final Examinations.

TWO-YEAR TRADE-TECHNICAL EDUCATION CURRICULUM

FIRST YEAR First Semester	Description of Subjects	Units
Trade Educ. 101		5
Mathematics 101	College Algebra, Part I	3
Chemistry 101	General Chemistry	3
English 101	English Grammar Rhet. & Comp	3
Pilipino 101	Functional Grammar & Composition	3
Drawing 101	Introduction to Design	1
Physical Education 1		1
Military Science 11		1.5
		20.5

Second Semester		
Trade Educ. 102		5
Mathematics 102	College Algebra, Part II, Pre-Math 101	3
New Philippine Constitution		3
Chemistry 102	Inorganic Chemistry Pre-re: Chem. 101	3
English 102	Technical Writing and Reporting	3
Pilipino 102	Filipino Literature, Pre-re: Pil. 101	3
Drawing 102	Elementary Project Design	1
Physical Education 2		1
Military Science 12		1.5
		23.5

SECOND YEAR First Semester		
Trade Educ. 201		5
Mathematics 201	Plane Trigonometry	3
Physics 201	Magn. Elect., Sound and Light	3
English 201	Effective Speech, Pre-re English 101	3
Social Sc. 201	Phil, Ind. and Social Life	3
Drawing 201	Advanced Project Designs	1
Physical Education 3		1
Military Science 21		1.5
		20.5

FIRST YEAR Second Semester	Description of Subjects	Units
Trade Educ. 202	.....	5
Mathematics 202	Applied Industrial Math	3
English 114/202	Modern Literature	3
Physics 202	Mechanics and Heat	3
Psychology 201	Fundamentals of Psychology	3
Drawing 202	Design of Industrial Products	1
Physical Education 4	.....	1
Military Science 22	.....	1.5
		20.5

NOTE: Instead of Drawing Subjects, Technical Drafting Student will take:

Art Appreciation 101 (3 units) ..... 1st Sem, First Year
Art Appreciation 102 (3 units) ..... 2nd Sem, First Year
Architectural Study 101 (3 units) ..... 1st Sem, Second Year
Architectural Study 102 (3 units) ..... 2nd Sem, Second Year

ACCREDITATION

1. Students outside of State Colleges/National School of Arts and Trades will be required to validate their courses sought to be credited if the grade for each is less than 2.5 regardless of the same course description with the curricular offerings in this University.

2. A fee of ₱5.00 per subject to be validated is required before a Validating Examination is given,

3. Shopwork, Drawing and Professional Industrial Education shall not be given credit:

WITHDRAWAL

(Approved by the Academic Council, October 20, 1961)

A student, who owing to poor health, irregular attendance, or low scholastic achievement fails to meet the standards expected of him shall be placed on probation or dismissed from the University under the following

conditions.

1. Probation: A student who receives a final grade of "5" in any two courses or subjects at the end of the semester may be placed on probation by the University and warned to take the course more seriously. The parents or guardian of the student shall be advised by the Registrar of the Student's class standing in all cases. If after the period the student concerned does not show any improvement, he may be dismissed from the University. A student on probation shall take a reduction of study load of 1/2 of the regular semestral load.

2. Dismissal: A student who at the end of the semster receives a final grade of "5" in any three of his courses or subjects will be dismissed from the University for poor scholarship.

資料－５　ＴＵＰ３年制カリキュラム

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

Manila

THREE-YEAR INDUSTRIAL TECHNICIAN EDUCATION

The courses of instruction are aimed at training students for positions in wide field of industry and its many related occupations. The training is of the industrial technical with emphasis on the skill development of the craftsmen.

Graduates of this curriculum are expected to fill the positions for craftsmen or industrial technicians. Of the wide range of functions performed by technicians, the graduates are expected to (1) assist in solving problems of production; (2) serve in teaching or supervising craftsmen; (3) assist in conducting and preparing technical reports of experiments, test, surveys, and others; (4) construct and test prototypes and models of products or industrial equipment; (5) do drafting and design work, and (6) assist in sales engineering or advising the consumer.

The courses listed below are designed to provide craftsmen training plus basic professional knowledge needed by the technician in industry. A student may choose a field of specialization.

Major areas leading to a Technician Diploma are as follows:

Civil Technology (Buidling Construction)
Electronics Technology
Mechanical Technology
Refrigeration and Air-Conditioning Technology

TUITION AND OTHER FEES (per semester)

(Effective 1981 - 1982)

DAY PROGRAM

TUITION FEE	₱ 120.00
PLUS	
Registration Fee (New Students only)	5.00
Laboratory Science Fee (per subject))	5.00
Student Privilege Fee	10.00
Library Fee	5.00
Medical and Dental Fee	5.00
Athletic Fee	5.00
Late Registration Fee (Fine)	10.00
Special Removal Examination Fee (per subject)	5.00
Validating Examination Fee (per subject)	5.00
Fees for Change of Subject (s), Schedule, Class/Section	5.00
Fee for Change of Course	10.00

EVENING PROGRAM

Shopwork	₱ 70.00
Drawing or Laboratory Courses	20.00
Academic Subjects	6.00/unit
Physical Education Subjects	10.00
Plus	
Registration Fee (New Students only)	5.00
Laboratory Science Fee (per subject)	5.00
Student Privilege Fee	10.00
Library Fee	5.00
Medical and Dental Fee	5.00
Athletic Fee	5.00
Late Registration Fee (Fine)	10.00
Special Removal Examination Fee (per subject)	5.00
Validating Examination Fee (per subject)	5.00
Fees for Change of Subject (s), Schedule, Class/Section	5.00
Fee for Change of Course	10.00

MODE OF PAYMENT

50% ..... Tuition Fee Plus other Fees upon enrolment

25% ..... Before Semi-Final Examinations

25% ..... Before Final Examinations

COURSE CONTENTS

THREE-YEAR INDUSTRIAL TECHNICIAN EDUCATION

CIVIL TECHNOLOGY

Basic processes and wood machine operation, fundamentals of electricity, sheet metal, etc., wood frame construtruction, excavation, foundation and lay-out, house framing, stair-building, etc., Concentration on concrete construction, Engineering principles in surveying, mechanics, hydraulics, structural designing, materials testing, etc. Development of an all around civil technician with occupational confidence and versatility.

ELECTRONICS TECHNOLOGY

Structure of matter, magnetism, elements of electric circuits, mechanical and electrical works, etc., Integrated tubes, and solid circuits, Electronic measurement; Electronic servicing techniques, Microwave techniques, Industrial Electronic System.

MECHANICAL TECHNOLOGY

Skills development and shopwork experiences in the use and care of common metal working handtools, etc. Use of shaper and planner, layout and set-up works, etc. Processes required in the use of various kinds of milling machines and grinders, etc. Processes involving bending, rolling, forming, blanking, and fastening of metal parts, design, advanced manufacturing processes, etc. Procedures in engineering design from concepts to specifications, etc.

REFRIGERATION AND AIR-CONDITIONING

Skills development and shop experiences in the use and care of common metal working hand-tools, etc., Study of basic refrigeration components and parts, materials, functions of compressors, etc. Study of domestic refrigeration equipments, etc. Study of refrigeration equipment as applied to domestic, commercial, and industrial refrigeration, etc. Refrigeration application in the refrigeration field, etc., and study of conditioning system design etc.

THREE-YEAR INDUSTRIAL TECHNICIAN CURRICULUM

ELECTRONIC TECHNOLOGY

First Semester	Description of Subjects	Units
EL 111	Electricity I (Structure of matter, magnetism, elements and electric circuits, mechanical and electrical work, etc.) Shopwork	4
ET 121	D.C. and Time Varying Circuits (Theory & Principles)	3
MA 111	Tech. Math I (Algebra, slide rule computation geometry, logarithms, trigonometry, equations, etc.	4
PH 111	Physics I	4
TD 111	Technical Drawing I	1
Eng 111	English I (Basic Communication A)	3
Pili 111	Pilipino I (Rhetoric & Composition)	3
Military Science 11		1.5
Physical Education 1		1
		24.5

Second Semester		
ET 111	Electronics I (Integrated Tubes and Solid Ckts. (Pre-re: Electricity I)	4
ET 122	Principles of Integrated Tube and solid state circuits	3
MA 112	Tech. Math II (Con't of Tech. Math I)	4
PH 112	Physics II	4
TD 112	Electronics Drafting (Pre-re: Tech. Draw. I)	1
Eng. 112	English II (Advanced Communication Skills, Technical Writing and Business Correspondence)	3
Pili 112	Pilipino II (Panitikang Pilipino) Pre-re: Pilipino 101	3
Military Science 12		1.5
Physical Education 2		1
		24.5

SECOND YEAR

First Semester	Description of Subjects	Units
Subjects		
ET 112	Electronics II (Electronics Measurements) Pre-re: ET 1	4
ET 123	Principles of Electronic Measurements) Pre-re: ET 1	3
MA 113	Calculus I (Differential Calculus) Pre-re: MA 112	5
CH 111	General Chemistry I	4
Eng. 113	English III (Group Discussion and Public Speaking)	3
New Philippine Constitution		3
ET 136	Radio Laws and Regulations	1
Military Science 21		1.5
Physical Education 3		1
		25.5

Second Semester

ET 113	Electronics III (Electronic Servicing Techniques) Pre-re: Electroncis II	4
ET 124	Principles and Techniques of Electronic Servicing	3
MA 114	Calculus II (Integral Calculus) Pre-re: MA 113	5
CH 112	General Chemistry II	4
Eng. 114	English IV (Modern Literature)	3
SS 112	Sociology of Philippine Labor (Pre-re: Introduction to Economics	3
Psycho 111	Fundamentals of Psychology	3
Military Science 22		1.5
Physical Education 4		1
		27.5

Summer Term

OJT 200	-	On-The-Job Training (Placement of the students in a cooperating industrial firm for further in plant training) 240 hours

THIRD YEAR

First Semester		
ET 114	Electronics IV (Micro-wave techniques) Pre-re: ET 111	4
ET 125	Theory & Principles of Micro-wave	3
SS 113	Industrial Management	3
MA 115	Operational Mathematics (Pre-re: MA 114)	3

THIRD YEAR

First Semester	Description of Subjects	Units
SS 116	Commercial and Labor Laws	1
ET 131	Instrumentation and Control	5
ET 132	Electronics Statistical Study and Analysis (Pre-re: ET II and MA 111)	5
TD 113	Tech. Drawing III (Advanced Problems on the Principles of Tech. Drawing I & II (Pre-re: TD 111)	1
		25

Second Semester

ET 115	Electronics V (Industrial Electronics System) Pre-re: ET IV	4
ET 126	Industrial Electronics System (Theory & Prin)	5
ET 133	Telecommunication Systems (Pre-re: ET II & SS 112)	5
ET 134	Magnetic Amplifiers (Pre-re: ET I & ET 121)	3
ET 135	Network Analysis (Pre-re: MA 114 & MA 115)	3
SS 114	Industiral Relations	3
		23

MECHANICAL TECHNOLOGY

FIRST YEAR
First Semester

MT 111	Machine Tool Processes I (Skill development and shopwork experiences in the use and care of common metal working handtools, etc.)	4
EL 110	Gen. Electricity (Emphasis in the characteristics of electro-mechanical circuits of N.C. & D.C. motors, etc.)	3
MA 111	Tech. Math I (Algebra, slide rule computation, geometry, logarithms, trigonometry, equation, etc.)	4
PH 111	Physics I	4
TD 111	Technical Drawing I (Principles of Eng'g Drawing)	1
Eng. 111	Pilipino I (Mga Paraan Ng Pakikipag-ugnayan) Analysis of Phil. Language, sounds, vocabulary, grammar, etc.)	3
Military Science 11		1.5
Physical Education 1		1
		24.5

FIRST YEAR

Second Semester	Description of Subjects	Units
MT 112	Machine Tool Processes II	4
MT 121	Basic Tools and Materials of Manufacturing	3
MA 112	Tech. Math II (Con't. of Tech. Math I) Pre-re: Tech. Math I	4
PH 112	Physics II	4
TD 112	Tech. Drawing II (Con't. of Tech. Drawing I) Pre-re: TD 111	1
Eng. 112	English II (Basic Communication B, Advanced) Tech. Writing and Reporting; Buss. Corres., Pre-re: Spanish 101	3
Pili 112	Pilipino II (Panitikang Pilipino) Readings on Phil. Literature	3
Military Science 12		1.5
Physical Education 2		1
		24.5

SECOND YEAR

First Semester

MT 113	Machine Tool Processes II (Use of shaper and planner; layout and set-up work, etc.) Pre-re: MT II	4
MT 122	Principles of cutting tool design (Pre-re: TD 113 and MA 112)	3
MA 113	Calculus I (Differential Calculus) Pre-re: MA 112	5
Eng. 113	English III Effective Speech (Group Discussion and Public Speaking) Pre-re: Eng. 112	3
CH 111	General Chemistry I	4
New Philippine Constitution		3
Military Science 21		1.5
Physical Education 3		1
		24.5

Second Semester

MT 114	Machine Tool Processes IV (Con't. of MT 113 with processes required in the use of various kinds of running machines and grinders, etc.) Pre-re: MT 111	4
MT 123	Jig and Fixtures Design (Pre-re: TD 113)	3
MA 114	Calculus II (Intergral I Calculus) Pre-re: MA 113	5

SECOND YEAR

Second Semester (Con't)	Description of Subjects	Units
CH 112	General Chemistry II	4
Eng. 114	English 4 (Survey of Modern Literature) Pre-re: English 111/112	3
SS 112	Sociology of Philippine Labor	3
Psycho 111	Fundamentals of Psychology	3
Military Science 22	.....	1.5
Physical Education 4	.....	1
		27.5

Summer Term

OJT	-	On-The-Job Training (Placement of the student in a cooperating industrial firm for further in plant training) 240 hours

THIRD YEAR

First Semester

MT 115	Machine Tool Processes V (Processes involving rolling, forming, blanking and fastening of metal parts; design, advanced manufacturing processes, etc.) Pre-re: MT IV	4
MT 124	Elementary of Tool & Die Making (Pre-re: TD 112 and MT IV)	3
MT 131	Strength of Materials (Pre-re: MA 113-Calculus I)	3
ES 112	Applied Mechanics (Pre-re: PH II)	4
MT 132	Materials of Engineering (Pre-re: CH II-Chem. I)	4
ES 111	Applied Thermodynamics (Pre-re: PH I)	4
SS 113	Industrial Management	3
TD 113	Technical Drawing III	1
		25

Second Semester

MT 116	Machine Designing (Procedures of Engineering design from concepts to specifications, etc.) Pre-re: General Metallurgy	4
MT 125	Problems in Machine Design (pre-re: Strength of Materials MT 131, MA 114)	3
MT 133	Mechanisms (Pre-re: Applied Mechanics-ES 112)	3
SS 114	Industrial Relations	3

THIRD YEAR

Second Semester	Description of Subjects	Units
MT 134	Applied Industrial Hydraulics and Pneumatics Pre-re: PH II)	3
MT 135	Industrial Quality Control (Pre-re: MA II-Math 112)	3
		19

REFRIGERATION AND AIR-CONDITIONING

FIRST YEAR

First Semester	Description of Subjects	Units
MT 111	Machine Tool Processes I (Skill development and shopwork experiences in the use and care of common metal working handtools, etc.)	4
EL 110	General Electricity I (Emphasis in the characteristics of electro-mechanical circuits of A.C. and D.C. motors, etc.)	3
MA 111	Tech. Math I (Algebra, slide rule computations geometry logarithms, trigonometry, equation, etc.)	4
TD 111	Tech. Drawing I (Principles of Engineering Drawing)	1
PH 111	Physics I	4
Eng. 111	Basic Communication A (Audio-lingual approach etc.)	3
Pili 111	Pilipino ((Mga Paraan Ng Pakikipag-ugnayan) Analyssis of the Philippine Language, sound, vocabulary, grammar, etc.)	1.5
Military Science 11		1
Physical Education I		1
		24.5

Second Semester

RA 111	Refrigeration Processes I (Study of Refrigeration components and parts, materials; functions of compressors, etc.)	4
RA 122	Domestic Refrigeration	3
MA 112	Tech. Math II (Con't. of Tech. Math I) Pre-re: MA 111	4
TD 112	Technical Drawing II (Con't. of Tech. Drawing I) Pre-re: TD 111	1
PH 112	Physics II	4

FIRST YEAR
Second Semester

	Description of Subjects	Units
Eng. 112	English II (Tech. Writing & Reporting: Buss. Corres.)	3
Pili 112	Pilipino II (Panitikang Pilipino) Readings on Philippine Literature	3
Military Science 12		1.5
Physical Education II		1
		24.5

SECOND YEAR
First Semester

RA 112	Refrigeration Processes II (Study of domestic refrigeration equipment, etc.) Pre-re: RA 111	4
RA 123	Commercial Refrigeration (Pre-re: RA 122)	3
CH 111	General Chemistry I	4

Second Semester

RA 115	Air-Conditioning Processes II (Study of conditioning system design, etc.) Pre-re: RA 111	4
RA 126	Air-Conditioning Accessories	3
RA 131	Automatic Controls	3
MT 134	Applied Industrial Hydraulics and Pneumatics	3
RA 132	Costs & Estimates in refrigeration and air-conditioning system (Pre-re: RA 122; 123; 124)	2
SS 114	Industrial Relations	3
RA 133	Applied Engineering Methods (pre-re: RA 132)	3
RA 134	Seminar I (Field trips to industrial, concerns, etc.)	*2
		23

CIVIL TECHNOLOGY

FIRST YEAR
First Semester

CT 111	Civil Technology I (General Woodworking and Carpentry	4
CT 121	Materials & Equipment of Construction	2
TD 111	Tech. Drawing I (Principles of Eng'g. Drawing)	1

FIRST YEAR

First Semester	Description of Subjects	Units
MA 111	Tech. Math I (Algebra, slide rule computation, geometry, logarithms, trigonometry, equation, etc.)	4
PH 111	Physics I	4
Eng. 111	English (Basic Communication A) Audio-lingual approach etc.	3
Pili 111	Pilipino I (Mga Paraanng Pakikipag-ugnayan) Analysis of the Filipino Language, sound, vocabulary, grammar, etc.	3
Military Science 11		1.5
Physical Education 1		1
		23.5

Second Semester

CT 112	Civil Technology II (General Electricity & Metal Work)	4
CT 122	Construction Codes, Rules and Regulations	2
TD 112	Tech. Drawing II (Con't. of Drawing) Pre-re: TD 111	1
MA 112	Technical Math II (Con't. of Tech. Math I) Pre-re: Math I	4
PH 112	Physics II	4
Eng. 112	English II (Tech. Writing & Reporting: Business Correspondence)	3
Pili 112	Pilipino 112 (Panitikang Pilipino) Reading of Philippine Literature)	3
Military Science 12		1.5
Physical Education 2		1
		23.5

SECOND YEAR

First Semester

CT 113	Civil Technology III (Plumbing, Concrete and Masonry Works)	4
EL 110	Elements of Buidling Plumbing & Pipe Works	3
CT 131	Applied Surveying	4
TD 113	Tech. Drawing III (Advanced Problems of the principles of TD III & TD 112) Pre-re: TD 112	1
CH 111	General Chemistry I	4
Eng. 113	English III (Group Discussion and Public Speaking) Pre-re: English 112	3

SECOND YEAR

First Semester	Description of Subjects	Units
New Philippine Constitution		3
Military Science 21		1.5
Physical Education 3		1
		24.5

Second Semester

CT 114	Civil Technology IV (Interior & Exterior Finishing)	4
CT 123	Principles of Interior and Exterior Finishing	3
MA 113	Calculus I (Differential Calculus) Pre-re: MA 112	5
CH 112	General Chemistry II (Fund. Principles of Gen. Chemistry I)	4
Eng. 114	English IV (Survey of Modern Literature) Pre-re: English 113	3
SS 112	Sociology of Philippine Labor	3
Psycho 111	Fundamentals of Psychology	3
Military Science 22		1.5
Physical Education 4		1
		28.5

SUMMER TERM

OJT	-	On-The-Job Training (Placement of student in a cooperating in plant training) 240 hours.

THIRD YEAR

First Semester

CT 115	Civil Technology V (Architectural and structural Plans)	4
CT 124	Plans and Details	3
MT 131	Strength of Materials (Pre-re: MA 113)	3
CT 135	Timber Design	3
MA 114	Calculus II (Integral Calculus) Pre-re: MA 113	5
SS 113	Industiral Management	3
		21

THIRD YEAR Second Semester	Description of Subjects	Units
CT 116	Civil Technology VI (Soil Mechanics and Material Testing)	4
CT 125	Contracts, Specification, and Occuptational Ethics	3
CT 132	Costs and Estimates	2
CT 133	Principles of Reinforced Concrete Design	4
CT 134	Materials, Testing, Pre-re: CT 132 & CT 133	1
CT 136	Seminar (On-The-Job Training site)	2
SS 114	Industrial Relations	3
		19

ACCREDITATION

1. Transferring students from schools other than State Colleges/Universities and National School of Arts and Trades will validate any subject sought to be credited if the grade is less than 2.5 even where it has the same course description offered in the University.

2. A fee of ₱5.00 per subject to be validated is required before a Validating Examination is given.

3. Shopwork, Drawing and Professional Indsutrial Education subjects shall not be given credit.

WITHDRAWAL

(Approved by the Academic Council, October 20, 1961)

A student, who owing to poor health, irregular attendance or low scholastic achievement, fails to meet the standards of the University shall be placed on probation or dismissed from the University under the following conditions.

1. Probation: A student who received a final grade of "5" in any two courses or subjects at the end of the semester may be placed on probation if he/she wishes to enrol during the suceeding semester and warned to take the course more seriously. In all cases, the parents or guardian of the student shall be advised by the Registrar of the student's class standing. If after the probation period the student concerned does not show any improvement he may be dismissed from the University. A student on probation shall be allowed a study load of only 1/2 of the regular semestral load.

2. Dismissal: A student who at the end of the semester receives a final grade of "5" in any three of his courses or subjects will be dismissed from the University for poor academic performance.